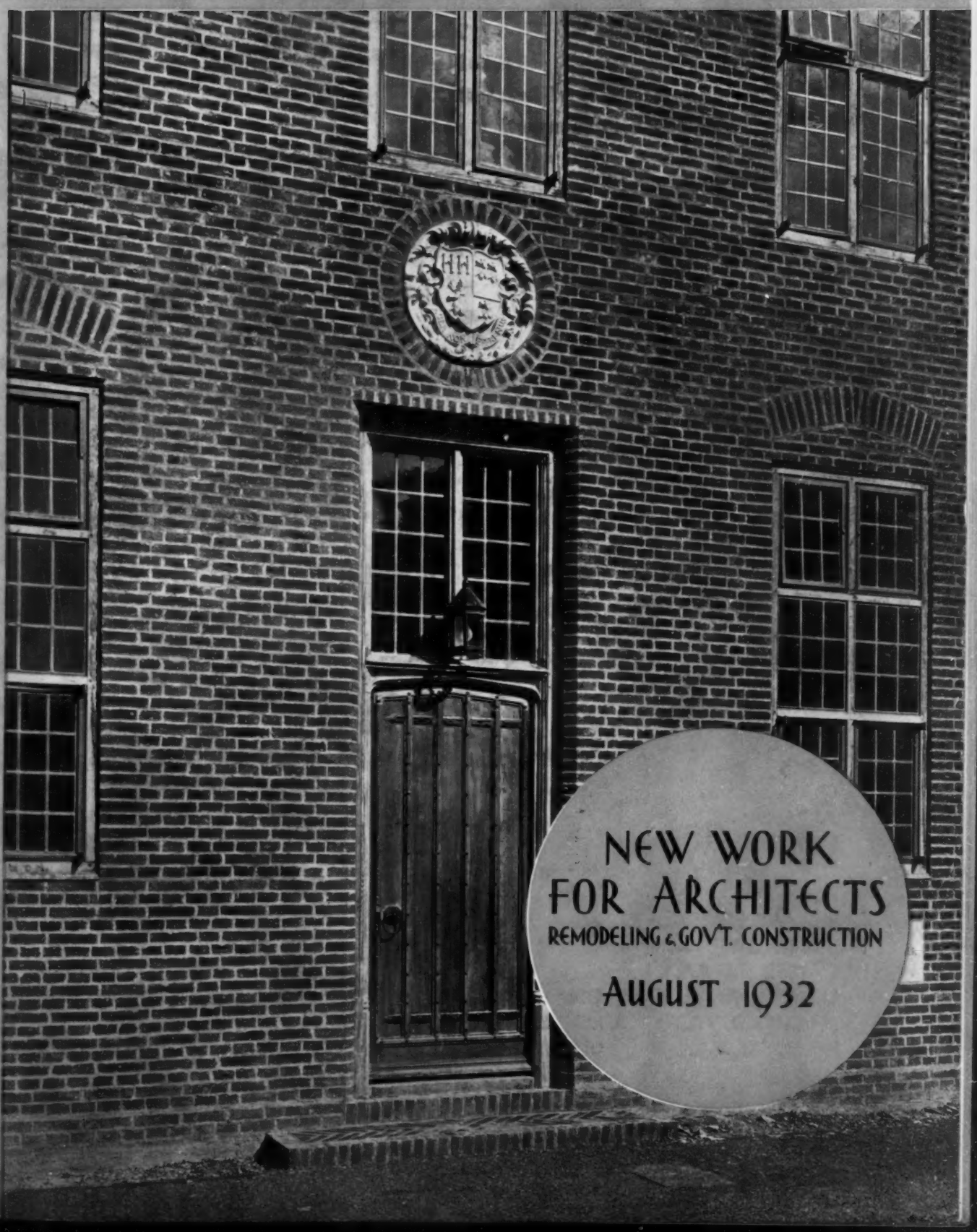
AUG 1 1932

THE ARCHITECTURAL RECORD



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AUGUST 1932

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Confidential Sales Bulletin No. 1106

Moline, Illinois
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THE ARCHITECTURAL RECORD

F.W. DODGE CORPORATION

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STEERING A CHARTED COURSE

Accurate detail and authentic information are always essential to specification. Such information is constantly available to the architect through the very helpful medium of Sweet's Catalogues. The Macbeth Catalogue of Illuminating Glassware, containing color illustrations, photometric analyses and full specification data, has been inserted in Sweet's to furnish the architect with the advanced, accurate and helpful information necessary for the planning of attractive and efficient illuminating systems. This catalogue appears in Volume "D" of Sweet's, pages 5101 to 5124 inclusive . . . Photometric charts were prepared in accordance with I.E.S. specifications. MACBETH-EVANS GLASS COMPANY, Charleroi, Penna.

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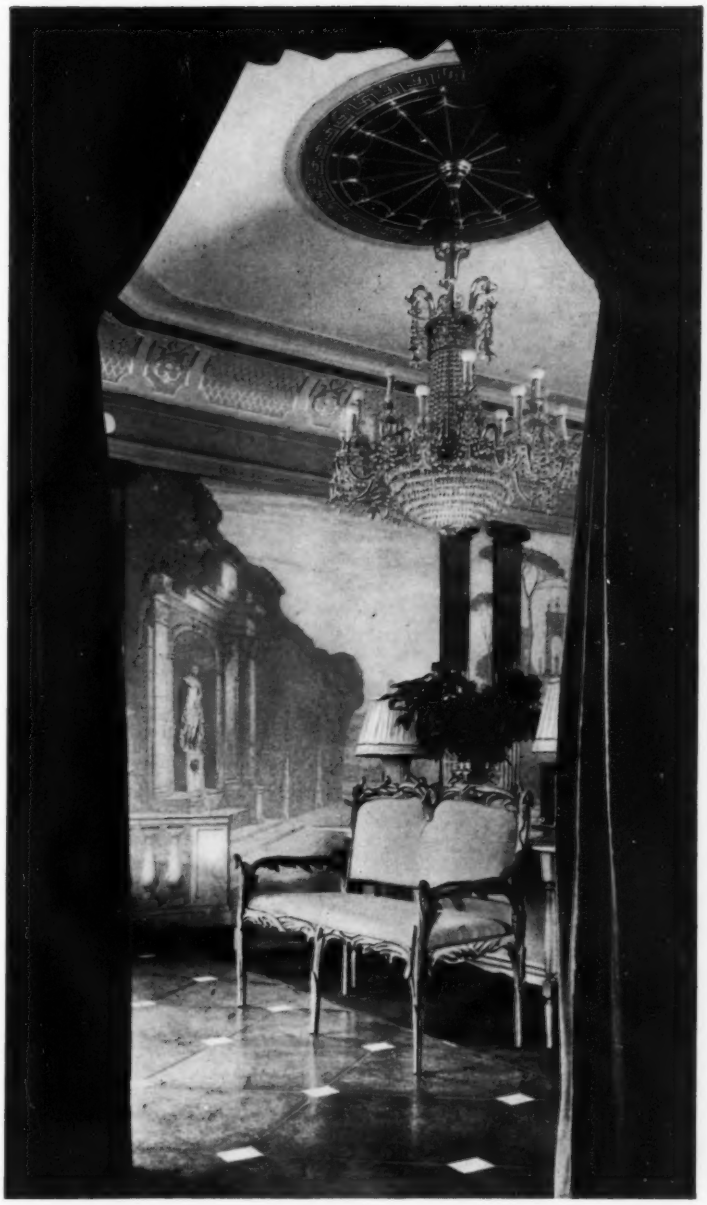

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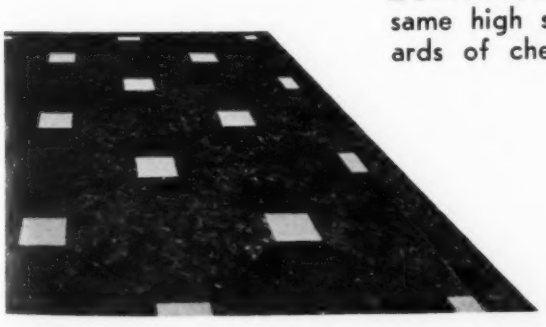

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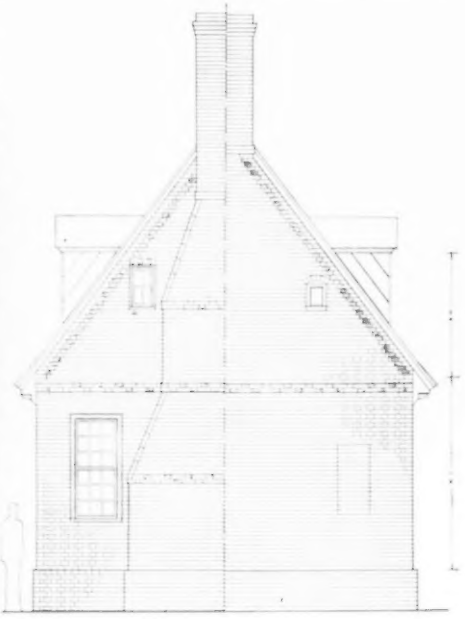


Domestic Colonial Architecture of Tidewater Virginia

ADAM THOROUGHGOOD HOUSE AT LYNNHAVEN RIVER, VIRGINIA

DOMESTIC COLONIAL ARCHITECTURE OF TIDEWATER VIRGINIA. By Thomas Tileston Waterman and John A. Barrows. Published by Charles Scribners' Sons, New York. 190 pages. 71 photographs; many measured drawings. Price $15.

This book, by fully describing fifteen houses near the tidal rivers of Virginia, gives the architectural setting for a particularly glamorous part of American Colonial history. These houses, accessible only by water until the recent advent of automobile roads and bridges, for the most part have been neglected, forgotten, or unknown by architects and students of architecture.

In dealing with this work of the seventeenth and eighteenth centuries (much of which has fallen on evil days), the authors have had in some cases to offer conjectural restoration based on old photographs, prints, drawings, and descriptive source quotations. They have carefully analyzed the evidence of existing structure and this documentary evidence. Details of construction, brick-bonding and moldings are described not only to complete the study of each house, but also to support its chronological placement. Illustrations are accompanied by brief histories of each building and its owners.

The successive phases of destruction, alteration, rebuilding, or whatever changes in the original have taken place are noted, the measured drawings attempting in most cases to show the design as first conceived. A map showing the locations of these great plantation houses is an inclusion well worth noting by authors of similar studies.

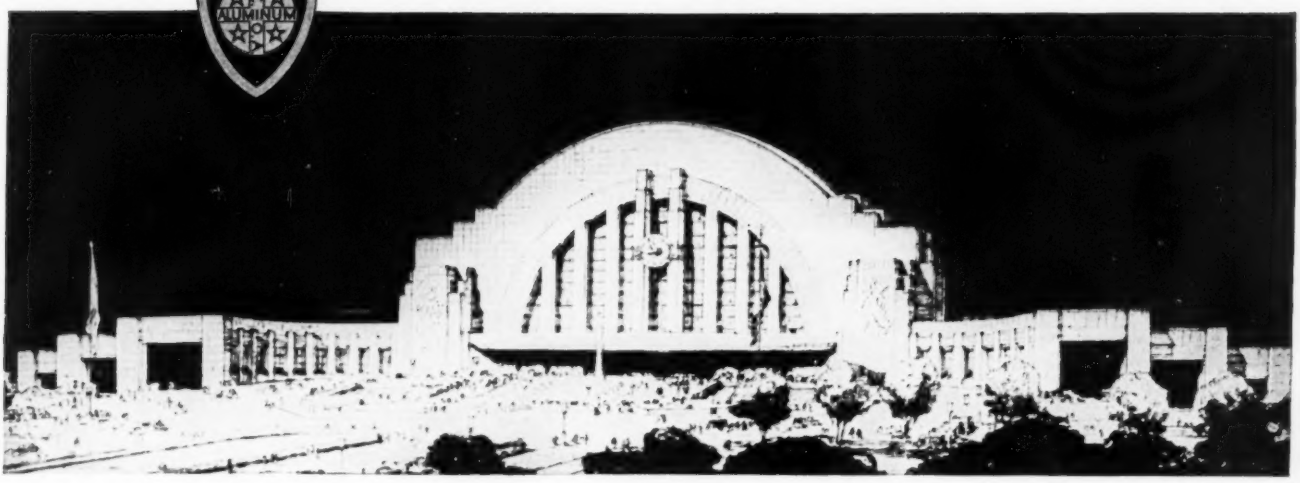
The work is completed by full-sized details of profiles, a comparison of outline plans, and a glossary of architectural terms.

EARLY CHURCH ARCHITECTURE IN NORTHERN EUROPE, WITH SPECIAL REFERENCE TO TIMBER CONSTRUCTION AND DECORATION. By Josef Strzygowski. Published by Harper & Bros., New York.

Mr. Strzygowski's theme is that the history of medieval art rests on an unsound foundation if it looks for its origin only to Greek and Roman, early Christian and Italian art. There was an old North European art about which we know little because the monuments were chiefly of wood, and consequently have not survived. There are, however, traces; where Finland is still forest the houses of the peasants are probably essentially the same as a thousand years ago.

It is not questioned that the main stream of culture flowed from the Near East through Southern Europe into Northern, gathering affluents from all sides; but the evidence accumulates of a northern stream flowing across the steppes. French archaeologists have lately been digging into the graves of Frankish chieftains who were buried with their accouterments, and finding bronze buckles points, sword hilts and so on, with delicate designs on them, which suggest Chinese motifs rather than Greco-Roman.

A. W. Colton.



Cincinnati Union Terminal. Architect: *Fellheimer & Wagner*, New York, N. Y. General Contractor: *James Stewart & Co.*, New York, N. Y. Sub-Contractor on Aluminum Work: *General Bronze Corp.*, Minneapolis, Minn.

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ALCOA ALUMINUM

PLANNING RESIDENCE HALLS FOR UNDERGRADUATE STUDENTS IN AMERICAN COLLEGES AND UNIVERSITIES. Published by The Bureau of Publications, Teachers' College, Columbia University, New York. 247 pages. No illustrations. Price $2.25.

The value of such a study as this is indicated by the following facts: three quarters of American institutions of higher learning offer board and room to some students; in 1927-28 this item resulted in over $57,000,000 in student fees; and it is estimated that $200,000,000 is invested in college dormitories in this country. The demand for residence facilities is well indicated.

This book offers practical information to college officers and members of building committees, giving them a clearer understanding of the functions and possibilities of such buildings. Reference to it facilitates an accurate statement of requirements to architects.

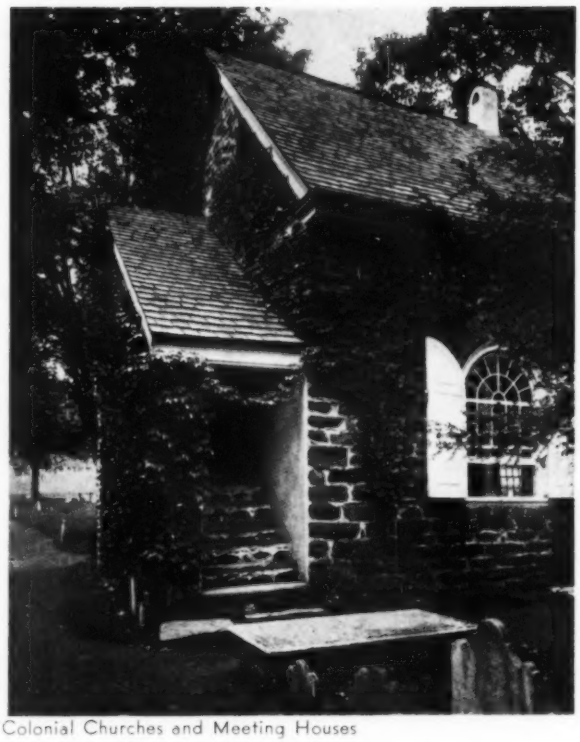
The author discusses the relations between architect and client, giving full definitions of the duties of both. The work explains and suggests solutions for the general problems of site, size, and planning (for living accommodations, food preparation and service, study, social activities, and administrative purposes). A check list of recommended provisions for safety is included, as well as definite suggestions for materials of floors and walls, the acoustic treatment, heating, ventilating and lighting. The last subject is made easy for reference by tables of suitable intensities and outlets for varying purposes.

Bibliographies at the ends of many chapters and summaries of the recommended standards and procedures complete the book.

CHECK LIST MATERIALS FOR PUBLIC SCHOOL BUILDING SPECIFICATIONS. By Lee Byrne. Published by The Bureau of Publications, Teachers' College, Columbia University, New York. 193 pages; tables. Price $2.25.

The securing of physical environment of good character and quality for school children depends very largely upon good specifications. This study, based on complete analyses of eighteen specifications and comparison with thirteen others, is a valuable reference for specification writers in architects' offices and for superintendents and business managers of schools. It will aid the architect in deciding on an approved construction system.

The author attempts to establish a standard plan of organization for school check list and specification material which may be used by any future investigator in this field or by any writer of specifications. The material may be used in its entirety or cut down by systematic elimination of items. Only the general specifications of school buildings (including the A.I.A. "General Conditions of the Contract") and not the mechanical trades are covered.



Colonial Churches and Meeting Houses

GALLERY ENTRANCE

ST. DAVID'S, RADNOR, PENNSYLVANIA

COLONIAL CHURCHES AND MEETING HOUSES (MIDDLE ATLANTIC STATES). By Philip B. Wallace and William Ellen Dunn. Published by The Architectural Book Publishing Co., Inc., New York. 350 photographs and 50 plates of measured drawings. Price $20.

The introduction to this volume, by Horace Wells Sellers, gives a brief historical survey of the times, characters, and buildings of the period. The photographs by Mr. Wallace, which comprise the greater part of the book, show exteriors, interiors, details such as staircases, pews, windows and doors, and gravestones. The pictures are uniformly well arranged and the interior views show care in recording the especially pleasant natural lighting of these places of worship. The dimensional drawings by Mr. Dunn show clearly the line and scale relations of windows, doors, railings, orders, elevations, and moldings.

ARCHITECTURAL SHADES AND SHADOWS. By Edgar Greer Shelton. Published by D. Van Nostrand Company, Inc., New York. 153 pages. Illustrated with line diagrams, renderings and photographs. Price $3.50.

The author of this book resolves all methods of shadow-casting into three: the method of oblique projections; of auxiliary or tangent cones; and the method of auxiliary and slicing planes. Many diagrams and plates illustrate these solutions. One-third of the book consists of dimensioned problems covering each point developed in the text.

HOTEL DE VILLE AT DREUX, FRANCE

DRAWING BY SAMUEL CHAMBERLAIN

THE ARCHITECTURAL RECORD AUGUST, 1932
VOL. 72—NO. 2

A SUBURBAN COMMERCIAL CENTER

BY H. W. ALEXANDER, SECRETARY, CITY PLANNING AND ZONING COMMISSION, LOUISVILLE, KY.

The Kentucky Chapter of the American Institute of Architects has recently conducted a competition among its members for the design of a Suburban Commercial Center. The idea of such a competition was conceived by the Louisville City Planning Commission which assisted the Institute in working out details and judging the designs that were submitted. Through the generosity of the Chairman of the Planning Commission, who is also a member of the Institute, a substantial cash prize was awarded the winner. First place was awarded Bergman S. Letzler, who depicted a modernistic group of buildings. Second place went to E. R. Gregg. Both winners are connected with Louisville architectural firms.

In Louisville, as well as nearly all American cities, commercial development in areas removed from the central business section has been haphazard, and little attention has been paid to the value of pleasing architectural treatment or to meeting adequately the demands of modern traffic conditions. The Louisville Zoning Ordinance will remedy this situation to a certain extent in the future, but a large share of the responsibility of improving the present order of things rests upon the shoulders of the architects. It was thought that a competition such as this would be of considerable educational value to the profession as well as to the general public.

The problem was "to design a suburban commercial center in accordance with the requirements of the Zoning Ordinance, best architectural practice, needs of the community and modern parking and traffic conditions."

Each contestant was furnished a drawing showing the size and location of the site, arrangement of streets and alleys, and zoning regulations affecting the use of property and location of the buildings. A list of commercial facilities that might be needed in the community and other information pertinent to the problem was also given the contestants.

Designs were judged on the following points weighed as indicated:

1. Composition (general arrangement of group) 50
2. Fulfillment of parking and traffic requirements 30
3. Architectural design 20

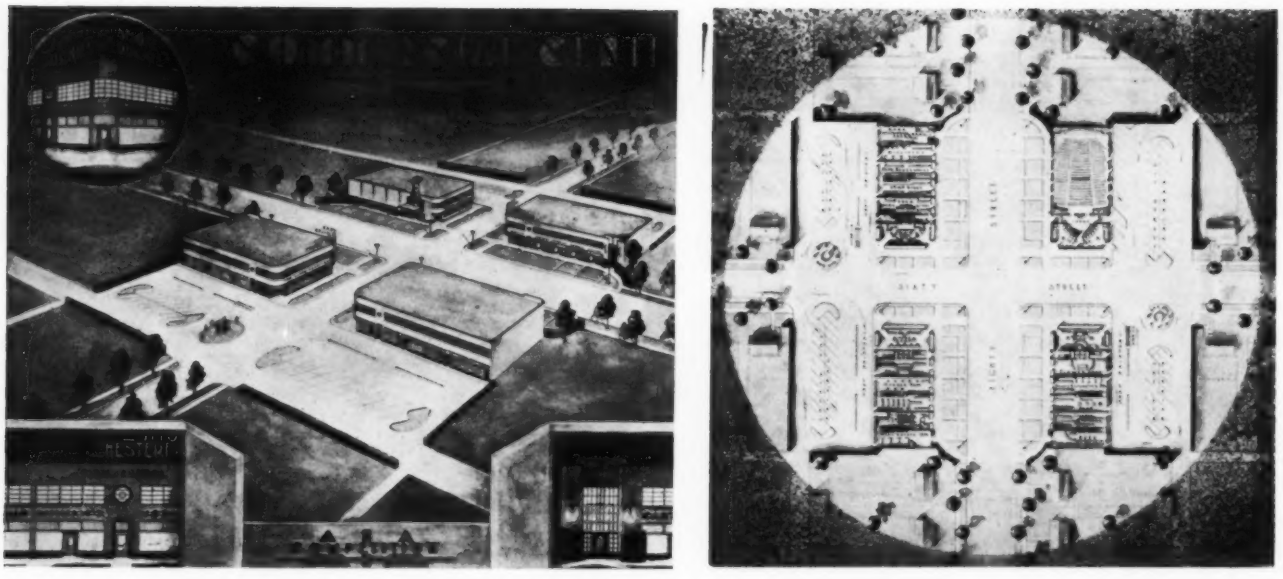
The committee of judges consisted of two architects, a real estate man, a retail merchant and the secretary of the Planning Commission.

In judging the designs, close attention was paid to the manner in which parking and off-street loading and unloading facilities were provided. The winning design handled these problems adequately. Parking space and trucking lanes were provided in the rear of the store groups with entrances from the side street. The gasoline filling stations were located in connection with the rear parking spaces in such a manner as to make them readily accessible but not detrimental to the appearance of the main buildings.

Set-back requirements of the Zoning Ordinance were observed and the embellishment of the space thus provided lends much to the attractiveness of the groups. Practical considerations, such as the size and arrangement of different types of stores, were well handled. There was some criticism directed at the location of the theater building, the thought being expressed that provision should have been made for utilization of the main street frontage for shops.

The modernistic architectural treatment was a somewhat pronounced departure from existing standards and created a favorable impression among the judges.

The winner of the second place submitted a design that was radically different from that awarded first place. Parking facilities were provided in front of the stores by setting back the curb, the filling station occupied an important corner and the location of the theater made it possible to utilize the frontage on both streets for shops. The architectural design of the group made a pleasing appearance.

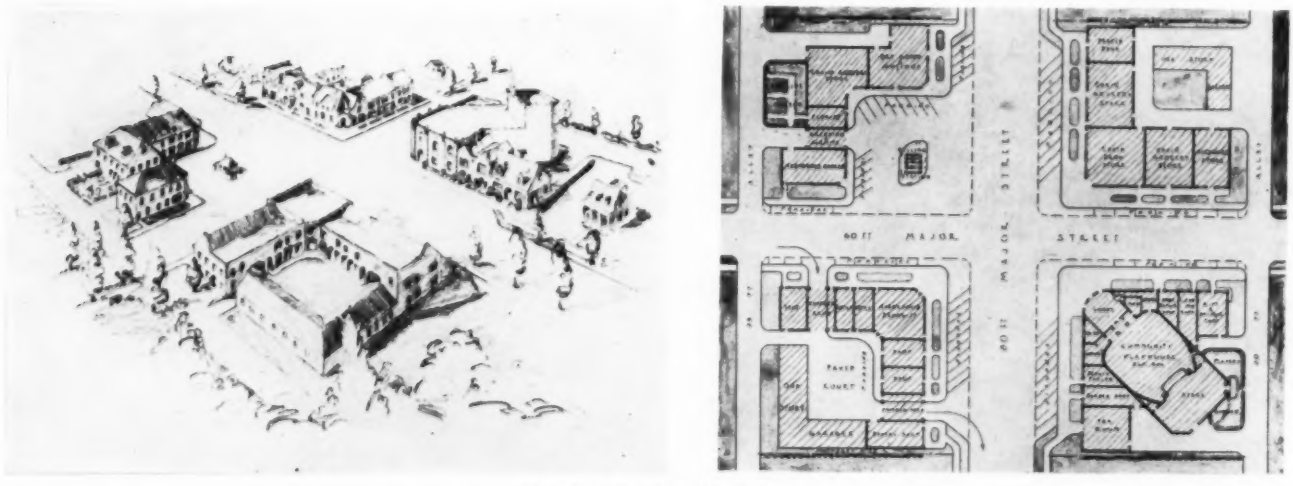


FIRST PRIZE AWARD
BERGMAN S. LETZLER, ARCHITECT
DESIGN OF A SUBURBAN COMMERCIAL CENTER

Architects in cities throughout the United States are becoming increasingly aware of the need for associated effort in developing and in working out a possible building program for their locality. In some cities architects have already formed groups to study the actual existing need for housing for the rehabilitation of commercial centers and blighted areas. Recommendations are being made for schools, playgrounds, libraries and public buildings.

The Building Congress of New York City, under the direction of architects, city planners and leading contractors of Manhattan, is formulating a plan to study the needs for further construction. The Building Congress of Memphis, Tennessee, also with architectural leadership, is undertaking to frame a building program. Chapters of the Institute and other architectural and city planning groups have been seeking to launch building projects.

The competition conducted by the local architects of Louisville, Kentucky, should be emulated by architects in other cities.



SECOND PRIZE AWARD
E. R. GREGG, ARCHITECT
DESIGN OF A SUBURBAN COMMERCIAL CENTER

BRANCH BANKS—A FIELD FOR REMODELING

That run-down properties can be economically reclaimed and modernized has been demonstrated by the activities of the National City Bank of New York. Mr. Aaron G. Alexander, architect for the National City Realty Corporation, in an interview with a staff member of The Record, furnished the data given here.

In establishing a branch bank many factors are involved in somewhat the same manner as in establishing any sound business. The neighborhood is first surveyed for a view of what the locality is able to support at present and then the future is taken into consideration. This latter is important. Records are gone into as to the growth in the past and compared with real estate projects being formulated. From this survey can be ascertained what sort of business the branch shall plan for. Along with these investigations, transportation facilities, both present and future, are considered; likewise, general traffic conditions as to proper location on the street and for parking.

After all of these items have been considered, the building, if there is one on the site, naturally has to be looked into as to the feasibility of altering or tearing it down and putting up a new building. In a branch bank of course the depth of the cellar, width of the first floor, height of ceilings, type of building, general construction and such items must all be taken into consideration. Upon the proper analysis of the existing building sometimes depends the success of the branch.

In the following pages five branches of The National City Bank of New York are set forth as case studies illustrating the possibilities of remodeling.

It is almost impossible to compare the cost of these alterations, one with another, with any great degree of accuracy, since each existing building and problem has a story of its own. But in considering the cost of bank alteration it should always be borne in mind that there are certain items in the installation which are paramount requirements. Such are the vault, night depository, burglar alarm system, counterscreen, officers' platform, check desks, work space, etc. These items may all vary owing to the size of the branch but they are parallel.

The difficulty of arriving at a comparative figure for this type of alteration is illustrated by the individual cases. At 79th Street and First Avenue it was decided that the upper floors were of no value, whereas at Fresh Pond Road they had a value. In both cases to tear the whole building down and build a monumental building would have been ahead of the neighborhood. Therefore the cost of the alteration in one case did not include renovating the flats and stores and in the other it did.

At 111th Street and Broadway revenue was to be obtained from a store and also the second floor. To obtain adequate storage space in the basement for the store it was necessary to install an oil burner and a tank which had to be placed in rock excavation; also, large baking ovens belonging to the baker formerly occupying the corner store had to be removed. The cost for all these alterations had to be added to the cost of the branch alteration.

A table of costs based on the cost per square foot of workable area and also on rentable area, can, however, be calculated. In the former is included the square footage of all the workable area used for all departments of the branch for banking purposes; in the latter there is added to the former the square footage of any area rented to outsiders. The following table covers the five illustrated branches of the National City Bank of New York:

Cost Per Square Foot

Branch	*Net Workable Area*	*Including Rentable Area*
East End Branch.....	$19.09	$15.70
111th Street and Broadway..	28.16	13.89
Brighton Beach.....	16.27	5.33
Fresh Pond Road.....	23.81	7.60
Gramercy Park.....	22.92	None

The interior treatment of each of the branches is a walnut counter screen with obscure glass top, Benedict nickel wickets, Carrara glass deal plates, walnut check desks and walnut wainscoting. The work counters in the cages behind the counter screen are of wood with linoleum top shelf. Cages are formed with iron tubing and wire mesh, enameled. First floors are finished with rubber tile and the basements, safe deposit space, in terrazzo. Radiators in public spaces are all inclosed. The only exceptions are the 111th Street and Gramercy Park branches where a bronze officers' rail and stair rail were used in place of walnut.

There is no doubt that the remodeled buildings illustrated in the following pages cost considerably less than would have new buildings with the same banking facilities. The savings in these alterations are naturally the existing walls, floor beams, and a percentage of the plumbing, heating and electrical work, where applicable.

The buildings before alteration, at first glance, appear to have slight possibilities as banking buildings. These pieces of property have been improved by the application of proper materials and careful analysis of the building and planning for future occupants.

With the condition of the building industry today, a careful study of alteration work by the architects should open a large field of activity. The problem must be approached from the point of view that it may be cheaper to alter than to rebuild. If the building were new, the design and detailing would be handled with a great deal less restraint and would therefore naturally exceed the cost of alteration.

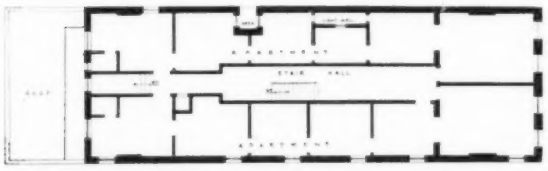
Before Remodeling.

CASE STUDY NO. 1

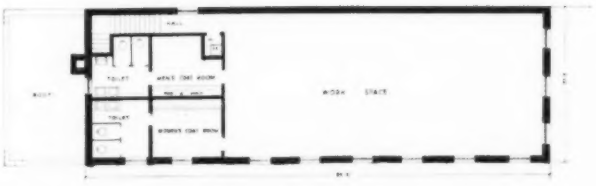
This building accommodated a store on the first floor and three cold-water flats above. Consideration was given to altering the flats above, but this was found to be too costly. The top two stories were taken off, gingerbread ornament removed and a simple cornice added.

NATIONAL CITY BANK OF NEW YORK — EAST END BRANCH AT 79TH STREET AND FIRST AVENUE

AARON G. ALEXANDER, ARCHITECT



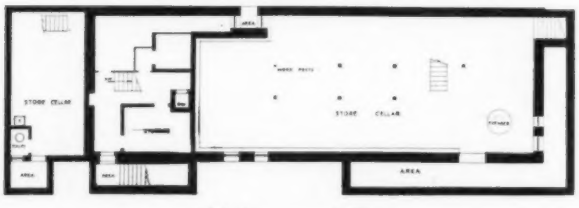
Old Second Floor Plan.



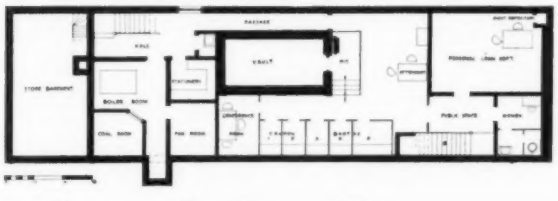
New Second Floor Plan.

Old Ground Floor Plan.

New Ground Floor Plan.



Old Basement Plan.



New Basement Plan.

After Remodeling.

NATIONAL CITY BANK OF NEW YORK — EAST END BRANCH AT 79TH STREET AND FIRST AVENUE
AARON G. ALEXANDER, ARCHITECT

CASE STUDY NO. 1

East End Branch at 79th Street and First Avenue

The building which occupied the site seemed hopeless. Consideration was given to altering the old unheated flats, typical of the neighborhood, but it was found that the cost was prohibitive. The locality indicated greater future possibilities than immediate. In view of the neighborhood future it was decided to do the most economical thing possible for the present. Such being the case, a building which would be in keeping with the present neighborhood and at the same time an improvement was planned.

Therefore the top two stories were taken off, the second floor left for work space and the first floor and basement remodeled for banking facilities. No attempt was made at architectural embellishment; by eliminating the gingerbread treatment around the second-floor windows, running a simple cornice and applying a coat of paint the building stands forth by its simplicity.

The plan of the branch offers complete safe deposit department, with coupon booths and conference room, as well as a personal loan room, in the basement. On the first floor are complete banking facilities, with officers' platform, usual tellers and a compound interest department. The second floor is devoted to bank personnel's toilets and locker rooms and large work space. There is also a night depository, and complete protection systems throughout.

Latere Co.

MAIN BANKING ROOM

Latere Co.

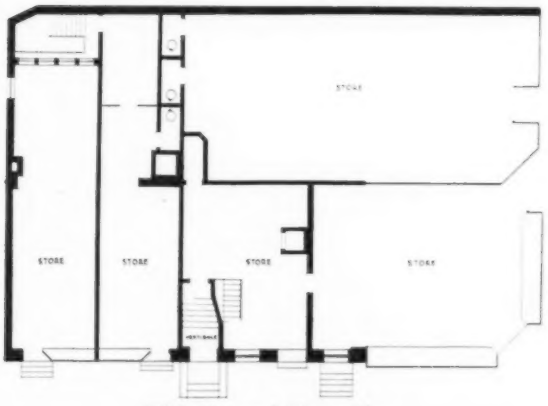
Old Exterior.

CASE STUDY NO. 2

The general structure of the building was good. The old building was altered, with few changes.

NATIONAL CITY BANK OF NEW YORK — 111TH STREET BRANCH

AARON G. ALEXANDER, ARCHITECT



Old Ground Floor Plan.

New Second Floor Plan.

New Ground Floor Plan.

New Basement Plan.

Latere Co.

New Exterior.

NATIONAL CITY BANK OF NEW YORK — 111TH STREET BRANCH
AARON G. ALEXANDER, ARCHITECT

CASE STUDY NO. 2

111th Street and Broadway Branch

This location on Broadway and in close proximity to Columbia University assured this branch somewhat of a fair amount of business. The necessity of erecting a monumental building was avoided as the building on the site had some possibilities. The removal of a large sign on the roof immediately gave the building some scale. The brickwork of the old building was of good character, so it was decided to save it.

•

The introduction of ornamental-iron window frames and entrance vestibule with bronze doors gave the building some importance. The banking facilities for the present do not demand the entire use of the first floor or any of the second floor.

•

A shop was placed on the Broadway side and the second floor left open for renting, both of which were soon occupied, giving additional revenue to the branch until such time as business grows to where it will be necessary to use this space. The same facilities are offered to the public here as at 79th Street and First Avenue.

Latere Co. MAIN BANKING ROOM

Latere Co. OFFICERS' PLATFORM

Old Elevation.

NATIONAL CITY BANK OF NEW YORK — BRIGHTON BEACH BRANCH

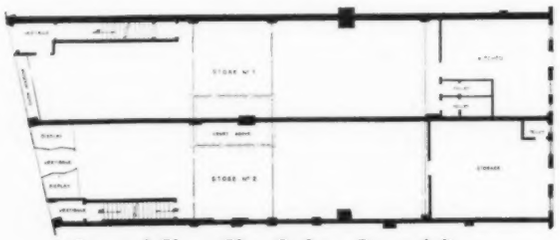
AARON G. ALEXANDER, ARCHITECT

CASE STUDY NO. 3

Two stores were used for the bank floor with vault and safe deposit department in the rear of the first floor. There is work space at the rear of one of the apartments on the second floor. The rest of the second floor is rented.

New Second Floor Plan.

New Ground Floor Plan.



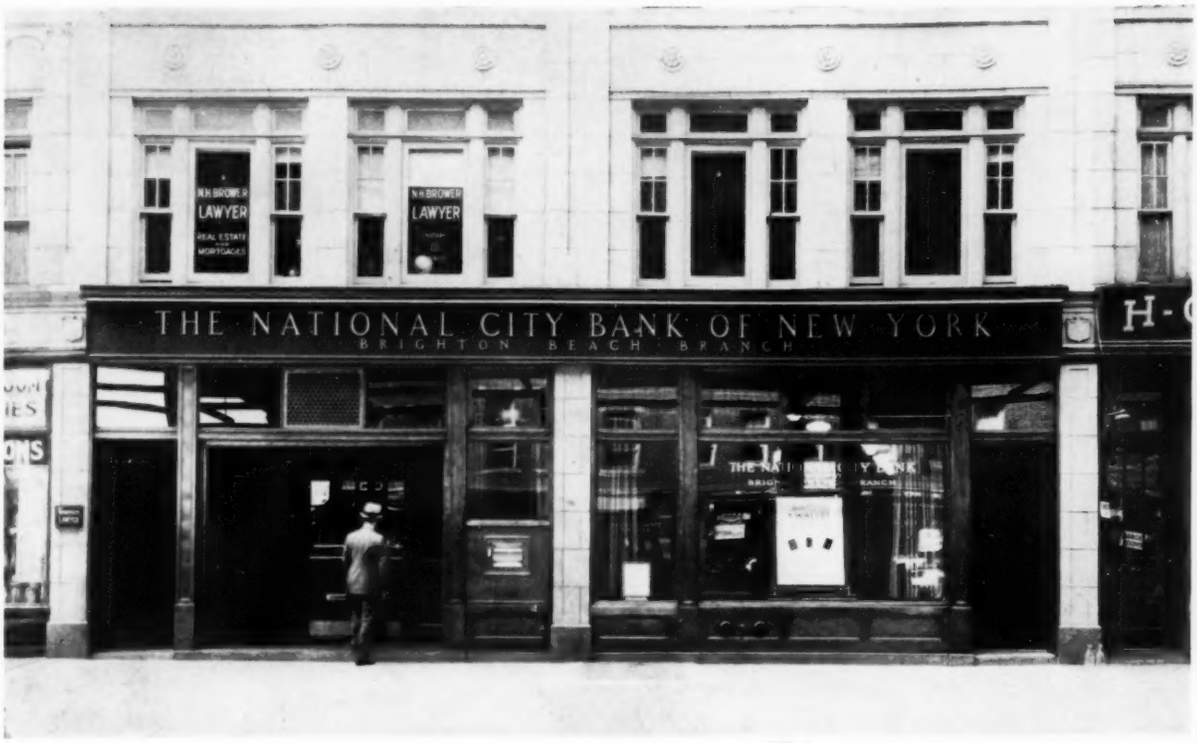
Ground Floor Plan Before Remodeling.

CASE STUDY NO. 3

Brighton Beach Branch

Here is an excellent example of what a little cleaning can do to improve a neighborhood. Two stores were used for the bank floor and, owing to tide water, the vault and safe deposit department were placed in the rear of the first floor, with the work space at the rear of one of the apartments on the second floor. The rest of the second floor is rented. The bank offers the same banking facilities as the aforementioned branches.

In studying this particular branch it was found that the two stores could be thrown together economically as the dividing wall had steel columns and beams supporting the second floor. Although placing the vault on the first floor instead of in the basement necessitated lower foundation supporting walls there was considerable saving in not having to excavate. This saving also included such items as ventilation for the safe deposit department, concrete and terrazzo floor, terra cotta and plaster walls throughout.



New Elevation.

NATIONAL CITY BANK OF NEW YORK — BRIGHTON BEACH BRANCH
AARON G. ALEXANDER, ARCHITECT

VIEW OF BANKING ROOM

VIEW OF BANKING ROOM

OFFICERS' PLATFORM

TYPICAL SAFE DEPOSIT DEPARTMENT

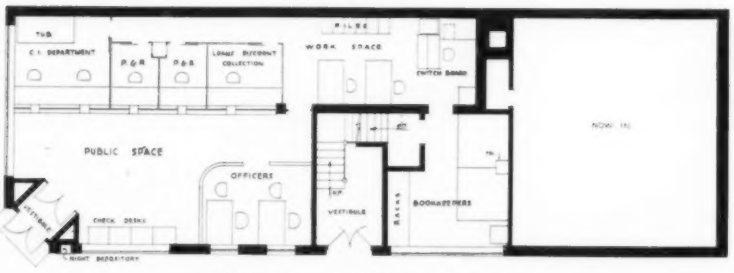
NATIONAL CITY BANK OF NEW YORK — BRIGHTON BEACH BRANCH
AARON G. ALEXANDER, ARCHITECT

Latere Co.

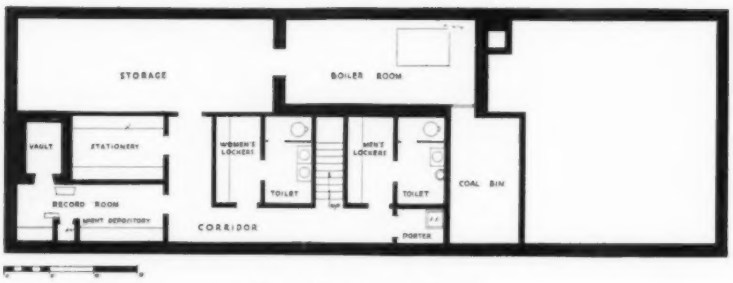
Before Remodeling.

NATIONAL CITY BANK OF NEW YORK — FRESH POND ROAD BRANCH

AARON G. ALEXANDER, ARCHITECT



New Ground Floor Plan.



New Basement Plan.

CASE STUDY NO. 4

The building in this case was unaltered. It was decided, however, to improve the flats on the upper floors. The facilities offered by this bank were adjusted to a slow-going but stable neighborhood. A controlled store at the rear gives ample room for expansion.

Latere Co.

After Remodeling.

NATIONAL CITY BANK OF NEW YORK — FRESH POND ROAD BRANCH

AARON G. ALEXANDER, ARCHITECT

CASE STUDY NO. 4

Fresh Pond Road Branch

With this building, situated at Fresh Pond Road and Myrtle Avenue, Brooklyn, the question of the neighborhood was thoroughly considered. It was decided to improve the flats and revenue is now being obtained from them. The branch is very small as the neighborhood seemed to be growing slowly; the value of the location is in the future. The banking facilities offered here are the same as in the other branches, except that there is no safe deposit department for the public (the locality does not demand it) nor is there a night depository box. It is one of the National City Bank's smallest branches but the store to the rear gives ample room for expansion.

Latere Co.

BANKING ROOM

Old Exterior.

CASE STUDY NO. 5

Gramercy Park Branch

As this locality was already well established, a building of a little more monumental character was decided on. Although the front is entirely new, use was made of the existing side walls and first-floor beams; second-floor beams for work space mezzanine at rear and the third-floor beams as the new roof beams. The two-story banking room is well lighted by the large exterior windows.

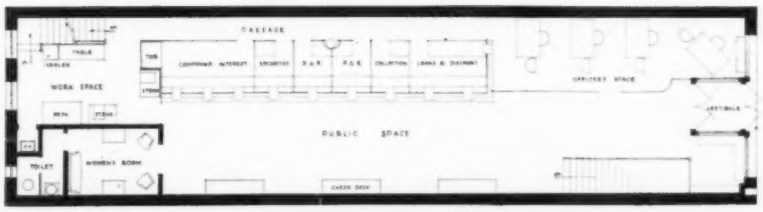
•

Here, as shown in the photographs, treatment of the plaster walls with flat planes and pilasters was introduced, with a walnut wainscot around the banking room. The officers' rail, stair and mezzanine rails are of bronze, gun metal finish, and Benedict nickel top rail and beaded newel posts.

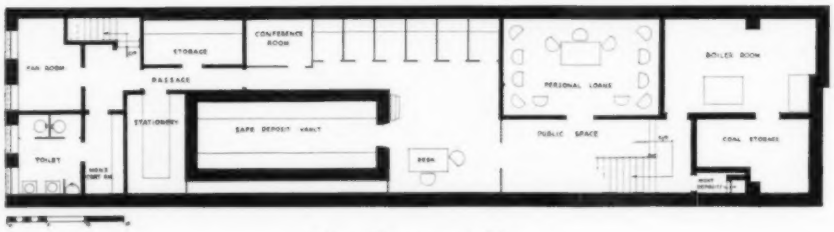
•

The counter screen is walnut with frosted glass and Benedict nickel wickets and Carrara glass deal plates. The floor is of rubber tile of colors to harmonize with the walnut woodwork. The safe deposit department in the basement has a terrazzo floor and public grille of iron painted gun metal, with Benedict nickel trimmings. The coupon booths are of wood, paneled and painted an ivory color.

New Mezzanine Floor Plan.



New First Floor Plan.



New Basement Plan.

NATIONAL CITY BANK
OF NEW YORK

GRAMERCY PARK
BRANCH

AARON G. ALEXANDER
ARCHITECT

New Exterior.

NATIONAL CITY BANK OF NEW YORK — GRAMERCY PARK BRANCH
AARON G. ALEXANDER, ARCHITECT

Lafere Co.

OFFICERS' PLATFORM

STAIR TO SAFE DEPOSIT DEPARTMENT

GROUP OFFICES FOR PHYSICIANS

AN ALTERATION IN LOS ANGELES

By J. R. DAVIDSON, Designer
Text by PAULINE SCHINDLER

A single reception room serves several eye, ear, nose and throat specialists.

Soft colors free from glare have been chosen in consideration of eye patients. The treatment rooms are of pale green Vitrolite, the surface toned down by sand-blasting, to overcome light reflection. Although central lighting fixtures have been used in waiting and consultation rooms, they have been designed in exact proportion to the room-form, so that reflected light is evenly distributed.

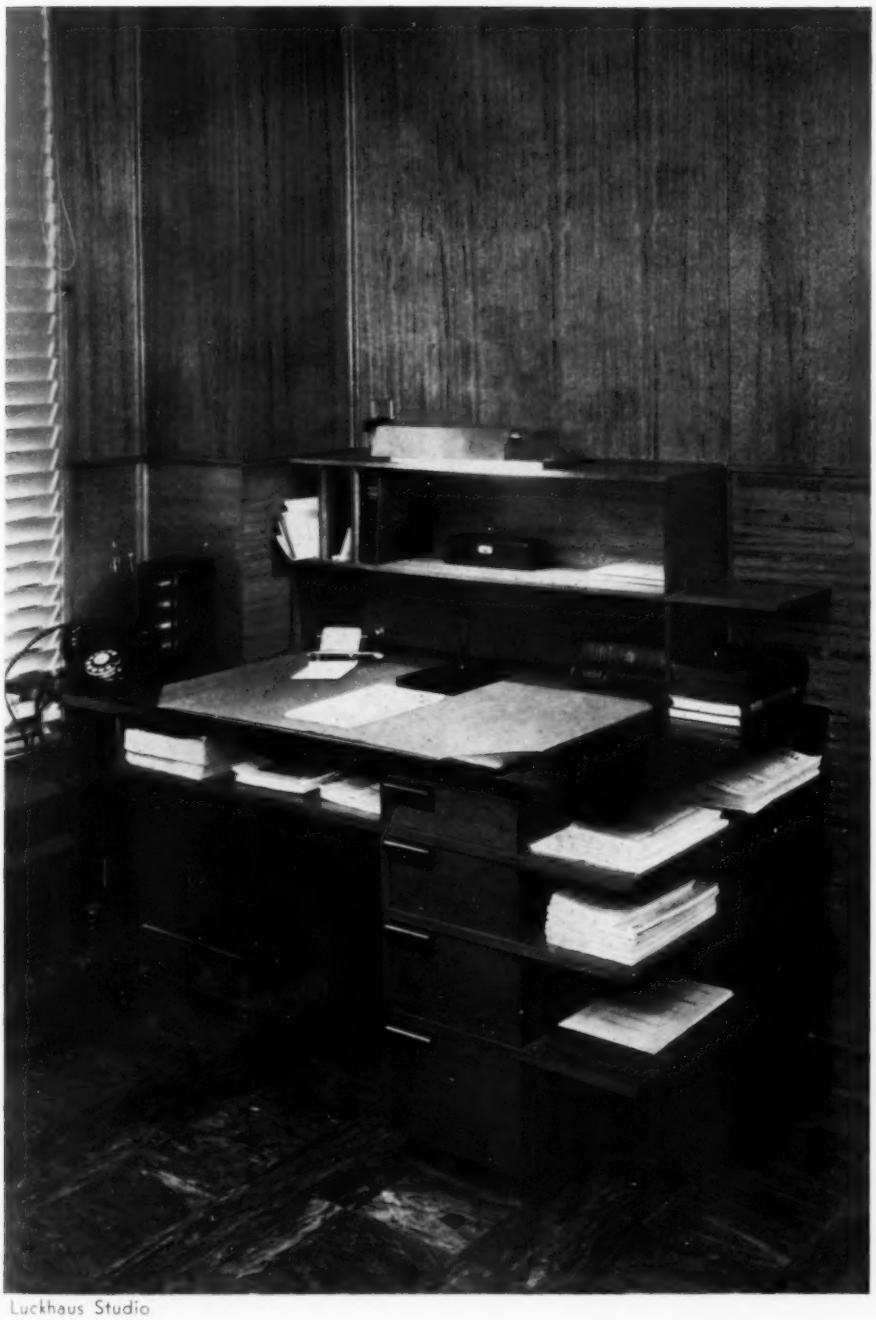
Furniture is off the floor wherever possible. There are no legs, except for chairs. Desks and implement trays are built out from the wall. All metal parts are monometal. Hardware is chromium plated. Lavatories are ivory in color.

Swinging shelves bring implements within reach at the pressure of a finger. Lavatories are operated by wrist or foot action. Of the four treatment rooms, the middle two, separated by folding doors, can be thrown open to become an operating room. Duplication of equipment has been avoided by an ingenious arrangement of the cabinets for medical supplies, bottles, etc., which can be reached by sliding panels and both-way-sliding drawers from either of two rooms.

The joint reception room has a pale yellow wallpaper protected by a clear transparent lacquer. A gray-green carpet matches the shade of rubber floor. Venetian blinds in pale yellow conform to the wall color. Wood trim was not disturbed other than to give it a natural mahogany finish. Upholstery is covered with copper-colored horsehair cloth. Reading lamp on magazine table, and picture frames are in polished aluminum.

Luckhaus Studio

JOINT RECEPTION ROOM FOR SEVERAL PHYSICIANS
J. R. DAVIDSON, DESIGNER

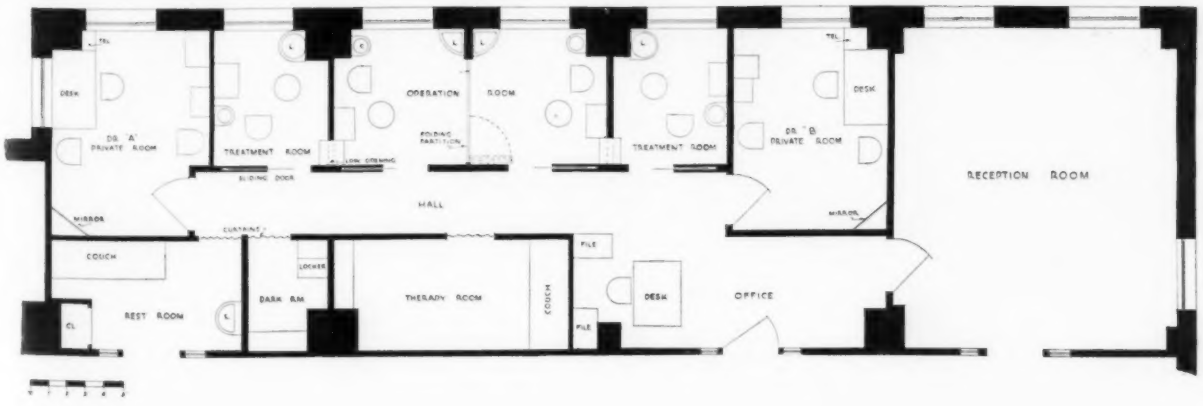


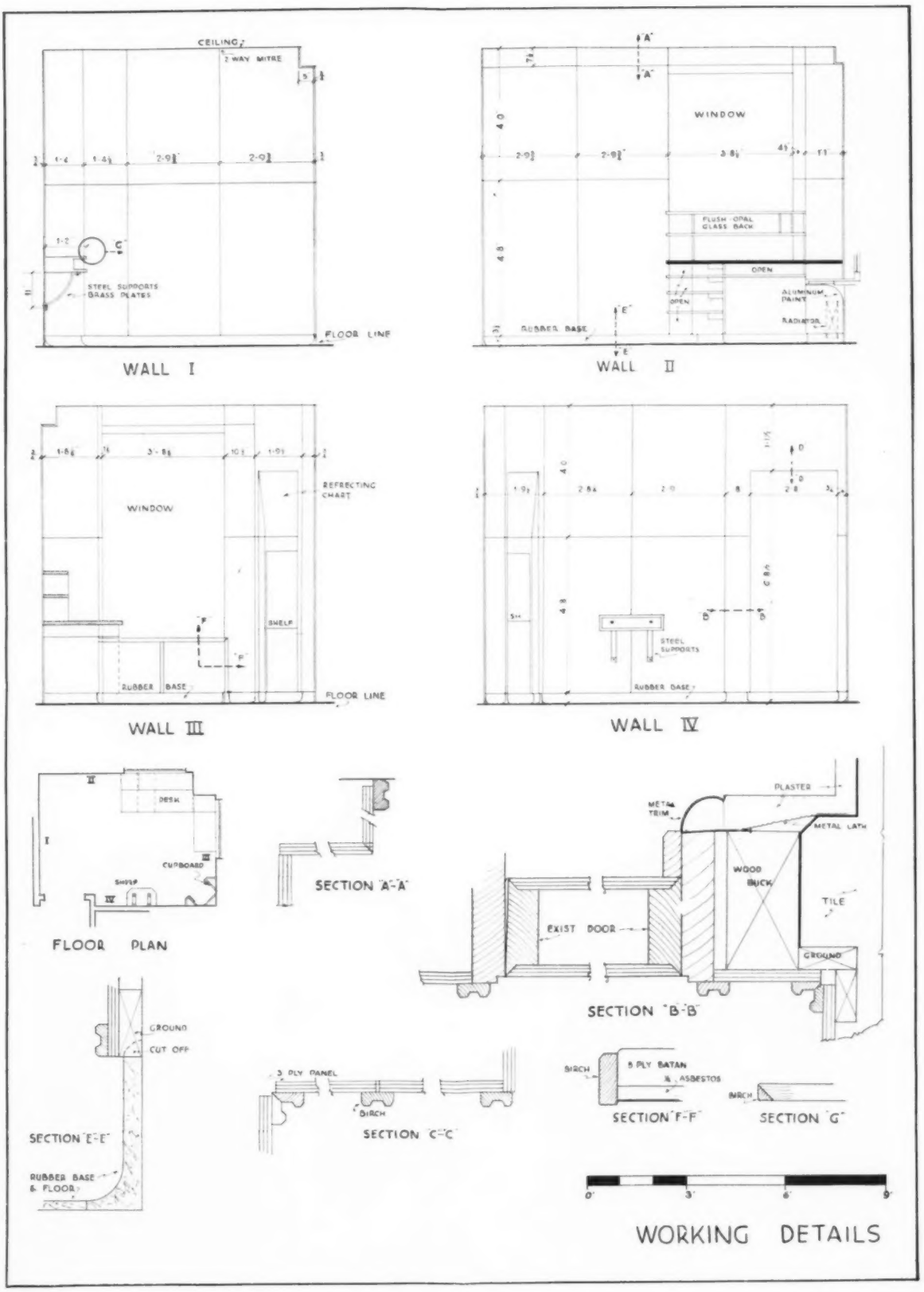
Luckhaus Studio

DESK IN CONSULTATION ROOM

J. R. DAVIDSON, DESIGNER

Mahogany wood in almost natural finish. Black Formica top. Curved rubber base and floor in green. All hardware polished brass or black Catalin. Adjustable desk lamp to match.





WORKING DRAWINGS OF TYPICAL ROOM IN SUITE OF OFFICES FOR PHYSICIANS

J. R. DAVIDSON, DESIGNER

PENNSYLVANIA DRUG COMPANY STORE, NEW YORK CITY

AN ALTERED STORE BUILDING PLANNED FOR MERCHANDISING NEEDS

By **ALLMON FORDYCE, Architect**

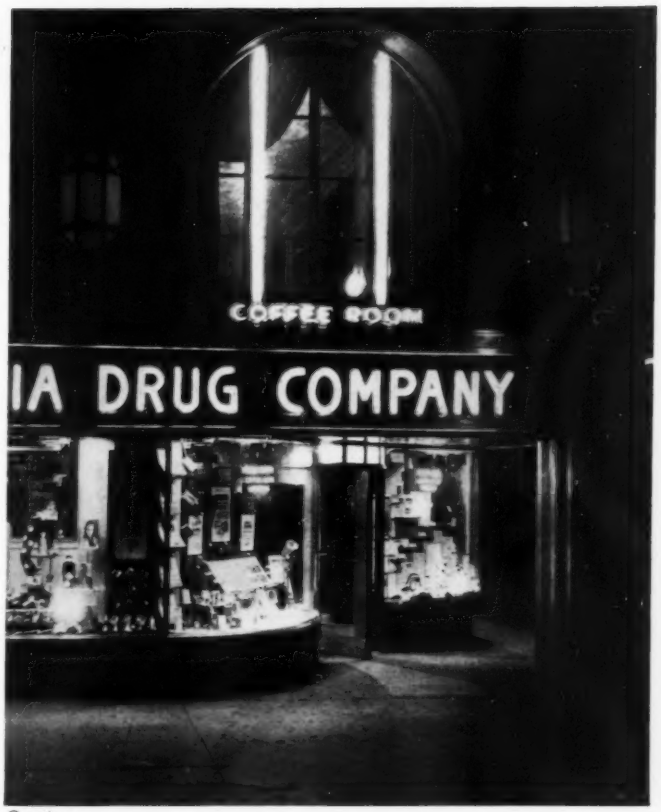
MERCHANDISING needs and operating problems were the determining factors in the planning, decoration and lighting of the drug store. It was decided by the Company at the outset to discard all cut-and-dried methods which had proved inadequate or hampered sale, and to employ new ideas which were logical and efficient. This freedom of attack of the merchandising problem by the merchant paralleled the functional approach to the architectural design of such a store by the architect.

THE MERCHANDISING PLAN

There are about 22,000 items in the inventory of the average large drug store. The display, storage and sale of these articles are simplified into the following divisions:

Drugs and Prescriptions and Accessories

The sale of such articles, which was the original function of the drug store, is imbedded in the subconscious mind of the buyer. He goes to a drug store to purchase these articles and they are so placed at the rear of the store that he must pass the displays of items less connected in his mind with the drug store, both coming in and going out.

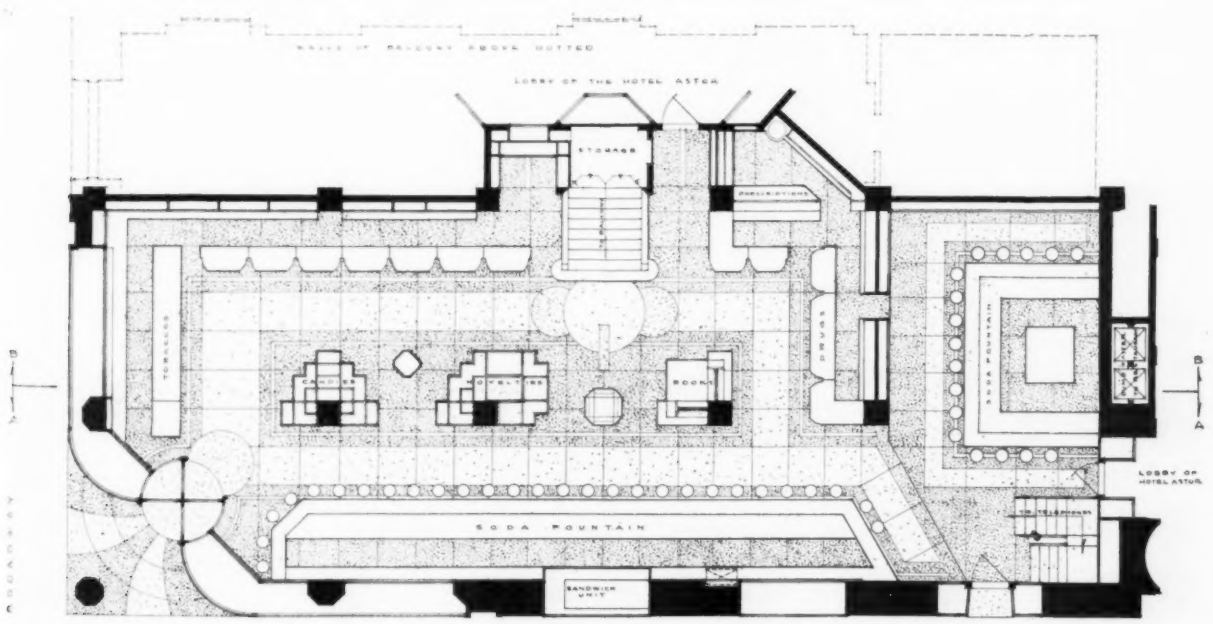


Garrison

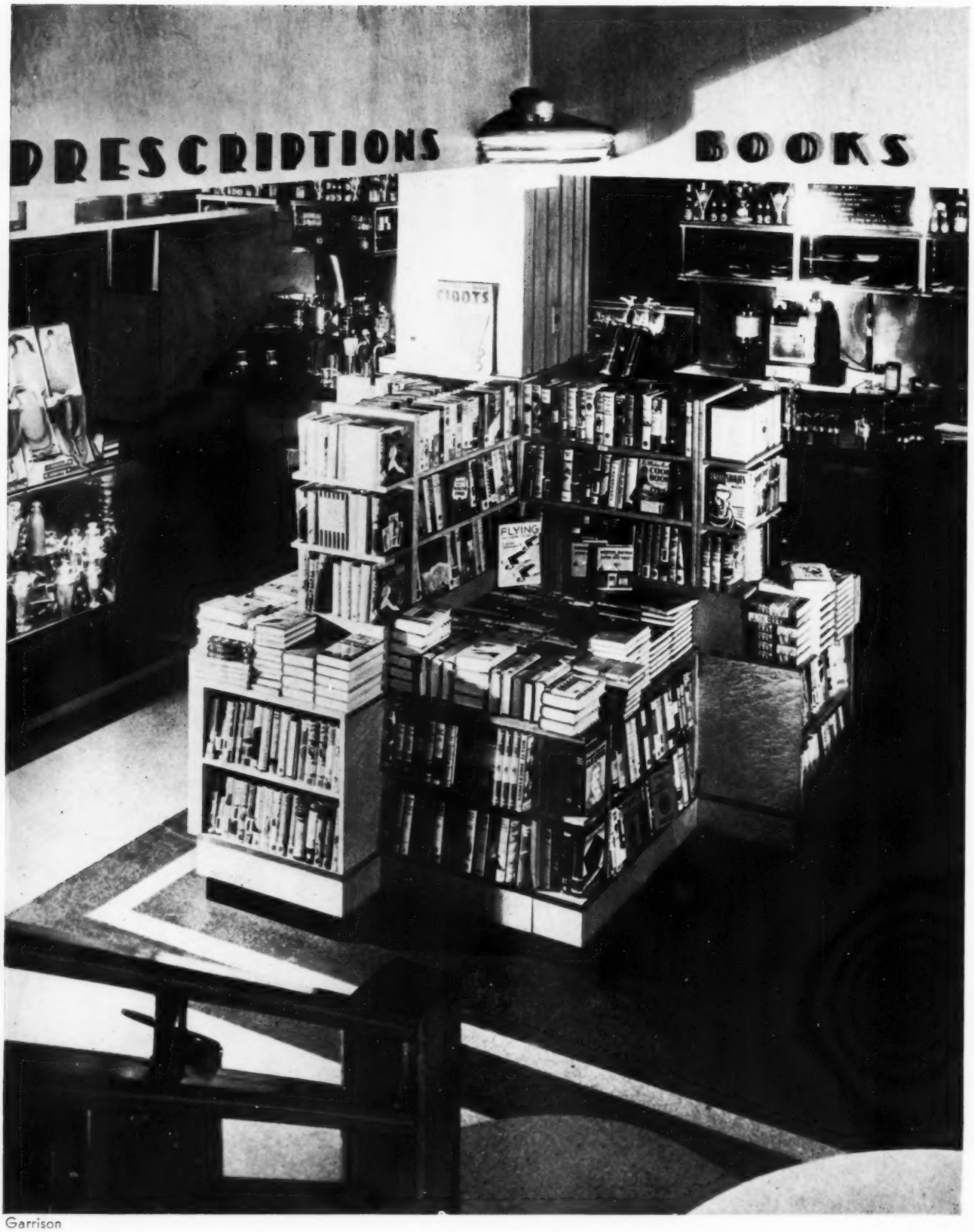
PENNSYLVANIA DRUG COMPANY STORE, NEW YORK CITY
ALLMON FORDYCE, ARCHITECT

Cosmetics, Perfumes, Theatrical Make-up, Etc.

These luxuries are a feature of the drug store and occupy the largest display and storage space. There is enormous profit on such items. In perfumes



FORTY FIFTH STREET
GROUND FLOOR PLAN



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PENNSYLVANIA DRUG COMPANY STORE, NEW YORK CITY
ALLMON FORDYCE, ARCHITECT

Garrison

PENNSYLVANIA DRUG COMPANY STORE, NEW YORK CITY
ALLMON FORDYCE, ARCHITECT

alone there are fifteen manufactures which offer many lines, types and varied sizes. The usual long display case with its jumble of articles confuses the eye and the mind of the prospective buyer. Therefore this display was broken up into small units which could focus attention. Such extremely small articles as lipstick and compacts, which heretofore were lost in big storage drawers, are displayed and stored in three small cases on top of the counter display cases. The rear wall case, of brushed chromium steel and colored mirrors and glass, which is essentially for storage, provides a brilliant display, with the closely packed and varie-colored boxes and bottles.

Tobaccos, Cigarettes, Pipes and Accessories

Cigarettes may be bought at any corner in this section of Broadway; therefore it was necessary to place the cigar department next to the entrance where it could be seen from the street, thus attracting the passer-by as well as the customer as he enters and leaves the store.

Candies

An island display is arranged in stepped sections at the entrance from which the buyer can see and handle the cellophane-wrapped packages, thus breaking down all barriers between the product to be sold and the buyer. The display is a composite of the varied products of about 25 manufacturers, each of whom has 4 or 5 different packages.

Novelties, Paper, Pens, Toys, Clocks, Cameras, Etc.

These center island displays are arranged for items which the buyer can look at and handle. These fast moving products, fads, crazes, and bargains are constantly changed depending on quick turnover for successful merchandising.

Books

A miniature book shop, compactly arranged, provides new books, best sellers and inexpensive reprints.

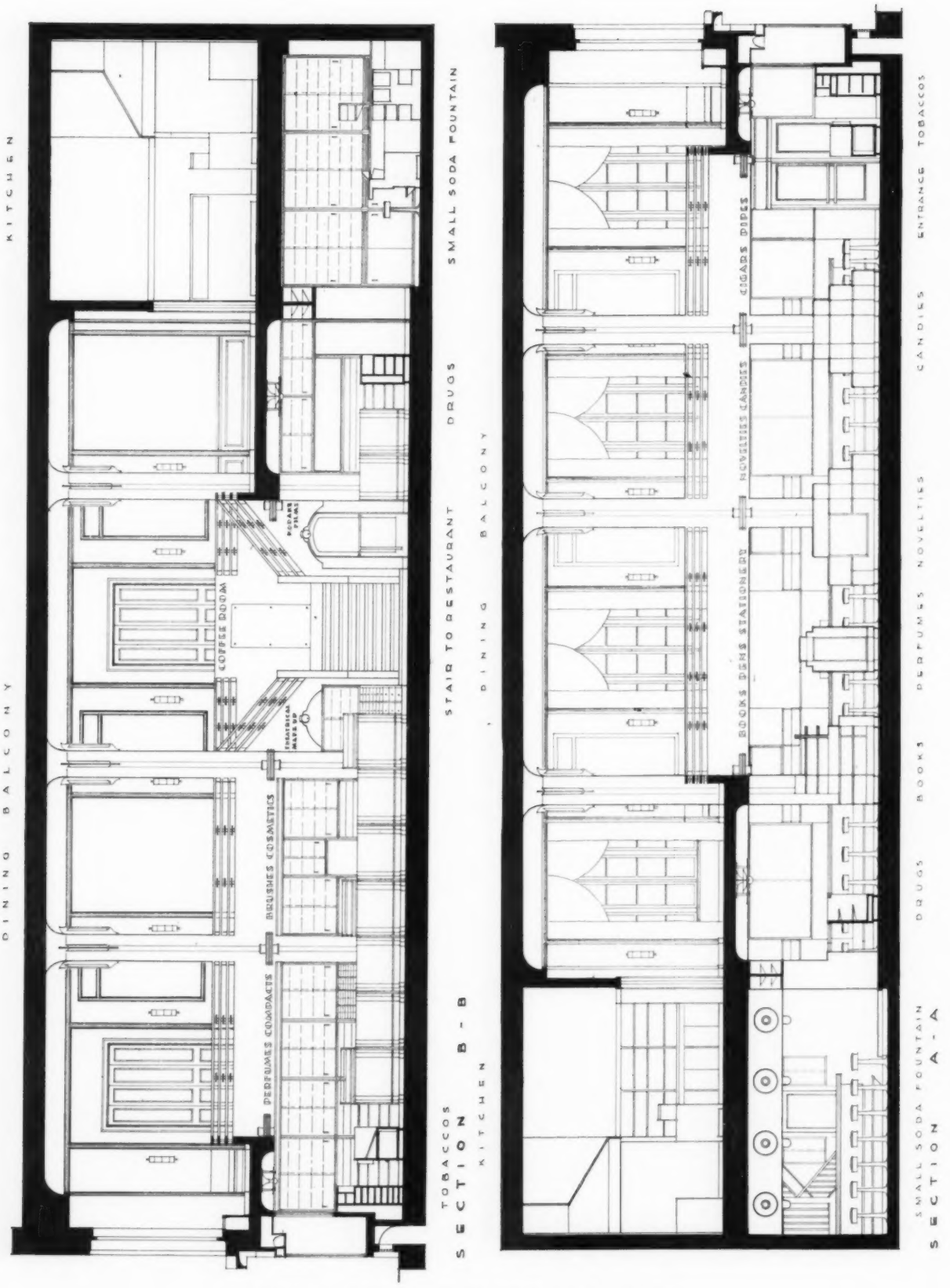
Telephones

One of the important attracting and remunerative features of the store is the telephone room provided on a mezzanine at the rear of the store.

The Soda Fountain

This, the most remunerative division of the drug store, pays all the overhead expenses. The two fountains make a flexible economical operation possible, since the rear fountain only operates

(*Continued on page* 104)



PENNSYLVANIA DRUG COMPANY STORE, NEW YORK CITY
ALLMON FORDYCE, ARCHITECT

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PENNSYLVANIA DRUG COMPANY STORE, NEW YORK CITY
ALLMON FORDYCE, ARCHITECT

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PENNSYLVANIA DRUG COMPANY STORE, NEW YORK CITY
ALLMON FORDYCE, ARCHITECT

MODERNIZATION AS A COMMUNITY PROGRAM

—CITIES UNDER DIRECTION OF ARCHITECTS SHOULD MAKE A SURVEY OF CONDITION AND RENTABILITY OF EXISTING BUILDINGS

—BUILDING PROGRAM SHOULD BE DRAFTED

—NEW BUILDING NEEDS SHOULD BE DETERMINED

Case Studies of Philadelphia Building Survey Indicate Present Need for Remodeling*

By A. B. RANDALL, Research Engineer
The Philadelphia Federation of the Construction Industry

With a view to diagnosing, curing, and also preventing unsatisfactory building enterprises, the Philadelphia Federation of the Construction Industry has made a survey and analysis of a group of representative office buildings. These buildings contain approximately 60 per cent of the total available office space in the central business and financial area of Philadelphia and represent a total investment of about $175,000,000. They represent a general cross-section of conditions, and range in age from structures recently completed to a building nearing the half century mark.

Although the rental market is not favorable at this time, nevertheless a study under present conditions presents a picture of strong high lights and correspondingly deep shades. Some office-building projects are remarkably successful despite times of depression and others, in sharp contrast, reveal mistakes in policy, planning and financing. Wide ranges were found in the net earnings which varied from a profit of nearly 18 per cent *on the equity* in one case to a deficit reaching more than 150 per cent on a rather dubious "book value" equity in another instance.

Uniformly the net earnings of the owners are taken as the remainders after all operating expenses and fixed charges have been met, including a proper allowance for depreciation. With this as a standard, the buildings studied were divided into four groups in accordance with their financial returns: successful, mediocre, indeterminate and unsuccessful buildings. The buildings classed as successful comprised 37½ per cent of the total number of buildings studied and showed net earnings ranging from 2½ per cent to nearly 18 per cent, with an average for the group of 4 4/10 per cent. The mediocre buildings comprised 10 per cent of the total and earned between 2½ per cent and 0 per cent, with an average of ½ per cent for the group. The indeterminate buildings included those which had been opened so recently that no fair classification could be made, since they had not yet had an opportunity to develop indicative earnings. These buildings comprised 7½ per cent of the total and had a net average deficit for the group of a little over 2½ per cent. The unsuccessful buildings included those which showed a deficit, had been foreclosed, or otherwise defaulted; this group comprised 45 per cent. Their average deficit found was approximately 17 per cent on the equity value.

Age groupings were made of the buildings. The principal phases of the cycles of building construction costs were studied and used as the basis for subdividing the buildings instead of the less significant typical five- or ten-year periods. While this division of the buildings into age groups indicates relative obsolescence, nevertheless, in addition, a division was made into groups specifically weighing this factor with subdivisions as new, intermediate, semi-obsolete and obsolete buildings in accordance with their general condition.

Age Not a Handicap

An interesting point was developed in the study of the buildings by age groups, as may be seen in Table (2). Here, occupancy conditions, rental rates and the average net return on the equity, over and above mortgages and after paying all operating expenses and fixed charges (including a proper allowance for depreciation), are shown.

When it is considered that the average age of the buildings in group D is more than thirty years, their relatively high return on the equity investment is most significant. It is also noteworthy that although the rental rates show a lower average than is found in the other groups of newer buildings, the average occupancy for the group is at a higher level. The reasons for this are complex, but unquestionably the lower commodity prices prevailing at the time these buildings were erected, including the level of building construction costs, have had a distinct bearing on the results. The original required investment was lower and in addition to this a substantial proportion of the investment has been written off through depreciation.

When buildings classified by their financial returns are distributed to the various age groups some interesting results develop. Table (3) shows the number of successful, mediocre, indeterminate and unsuccessful buildings in each of the previously outlined age groups.

*All data are based on confidential figures; in keeping with pledges, no building is or can be mentioned by name.

TABLE (1): CLASSIFICATION OF BUILDINGS ACCORDING TO THEIR FINANCIAL RETURN AND ANALYSIS OF FINANCIAL RETURNS FROM OFFICE BUILDINGS.

Groups by Financial Returns	Percentage of Total Buildings in the Groups	Net Return on the Equity Investment for the Groups		
		Maximum	Minimum	Average
Successful	37½%	18% —	2.5%	4.4%
Mediocre	10%	2.49%	0.0%	0.5%
Indeterminate	7½%	— 0.33%	— 13.2%	— 2.67%
Unsuccessful	45%	0.0%	— 169.0%	— 6.8%
Composite	100%	18% —	— 169%	0.1495%

Note: The minus signs (—) indicate deficits.

TABLE (2): ANALYSIS OF FINANCIAL RETURN IN OFFICE BUILDINGS ARRANGED IN AGE GROUPS.

Age Groups*	D	B	A	C
Dates of completion	1883-1913	1922-1927	1928-1931	1913-1917
Average building age	30.5	8.1	2.6	15.4
Number of buildings	12	14	9	5
Average occupancy per cent—all space	80.6%	79.0%	66.0%	73.2%
Average rental rate—all space	$2.68	$3.07	$3.14	$3.36
Average net return on the equity	2.2% Profit	1.17% Profit	—1.59% Deficit	—2.12% Deficit

*Age groups in the order of their net returns on the equity.

TABLE (3): ANALYSIS OF BUILDINGS BY AGE GROUPS AND BY GROUPS IN ACCORDANCE WITH THEIR FINANCIAL RETURN.*

Date of Completion	Total	Successful	Mediocre	Indeterminate	Unsuccessful
A—1928-1931	9	2	2	3	2
B—1922-1927	14	5	1	0	8
C—1913-1917	5	2	0	0	3
D—1883-1912	12	6	1	0	5
Total A and B	23	7	3	3	10
Total C and D	17	8	1	0	8
Totals	40	15	4	3	18

*Numbers of buildings grouped by their net earnings.

TABLE (4): ANALYSIS OF FINANCIAL RETURN OF BUILDINGS BY GROUPS IN ACCORDANCE WITH THEIR CONDITION OF OBSOLESCENCE.*

General Condition	Total	Successful	Mediocre	Indeterminate	Unsuccessful
New	16	6	3	3	4
Intermediate	12	3	0	0	9
Semi-obsolete	6	3	1	0	2
Obsolete	6	3	0	0	3
New and Intermediate	28	9	3	3	13
Semi and Obsolete	12	6	1	0	5
Totals	40	15	4	3	18

*Number of buildings grouped by their net earnings.

It is worthy of note that the newer buildings exemplified by groups A and B, and with a total of 23, include only 7, or about 30 per cent of the total, as successful buildings. In contrast to this, age groups C and D, with a total of 17, include 8 or about 47 per cent of the total, as successful buildings. This would indicate that age alone is not a handicap to success, and that newness is no assurance of profitable financial return.

If these buildings are grouped in accordance with their relative degree of obsolescence, to wit: into new, intermediate, semi-obsolete and obsolete buildings, the results are quite similar, as may be seen from Table (4). Here, as in the preceding

TABLE (5): ANALYSIS SUMMARY OF THE EFFECTS OF MODERNIZATION AND OF GOOD MAINTENANCE ON THE FINANCIAL SUCCESS OF OLDER BUILDINGS

Building groups by general condition	Number of older buildings in the group	Number and percentage extensively remodeled and modernized		Number and percentage maintained in good repair	
A—Old Buildings which are still successful					
Semi-obsolete	3	2	67%	2	67%
Obsolete	3	2	67%	2	67%
Total	6	4	67%	4	67%
B—Old Buildings which are mediocre and unsuccessful					
Intermediate	9	2	22%	3	33%
Semi-obsolete	3	0	0%	2	67%
Obsolete	3	0	0%	1	33%
Total	15	2	13.3%	6	40%
Total of the B Group **not** extensively modernized and **not** well maintained		13	86.7%	9	60%

table, the distribution of successful, mediocre, indeterminate and unsuccessful buildings is shown for building groups in accordance with their general condition. Out of the 28 new and intermediate aged buildings only 9, or about 32 per cent of the total, are successful, while among the older groups, the semi-obsolete and the obsolete buildings, 6 out of the 12 examples, or 50 per cent, are successful. This again indicates, and in almost the same ratios found in Table (3), that the newer buildings stand in no unique or advantageous position.

Remodeling Effective in Prolonging Use

Further study of the individual office buildings gives some interesting and instructive findings on the effect of remodeling and modernization on the relative financial return. The effects of age and obsolescence, as found from the analysis of the buildings by age groups or by groups based on the general conditions, showed a decided reversal of what was expected at the outset of the study: the older buildings were earning better average returns than the newer buildings. However, study of the conditions in the individual buildings indicated clearly that age and obsolescence, while important factors, were by no means as important as were the measures taken to counteract and offset the effects of these handicaps. For example, when the older buildings in the semi-obsolete group were singled out for study, it was found that a two-thirds majority had been extensively and intelligently modernized by their owners; and in a similar investigation of the successful buildings in the obsolete group (buildings which were still remarkably able to show adequate and satisfactory returns on the equity value), it was found that again in two-thirds of the cases modernization had enabled these buildings to remain in aggressive competition with newer structures. Also in both the semi-obsolete and the obsolete groups of successful buildings it was found that in two-thirds of the cases, they were maintained in either excellent or very good repair.

Although the positive effect of remodeling and modernization is illustrated by a relatively small number of buildings, consideration of the negative side of the matter adds to the case for modernization. Here lack of modernization among the older and less successful buildings is found in a very high proportion of cases, and is indicated also, from study of the individual examples, as a factor contributing in a marked degree to the lack of financial success of the group. Among the mediocre and unsuccessful buildings which are of intermediate age it was found that seven out of nine buildings had not been modernized by remodeling to any appreciable degree, and that six of this number were not even maintained in good repair. Among the semi-obsolete buildings in these unproductive groups, three out of three buildings were not aggressively modernized and but two were maintained in good repair; while among the obsolete buildings which were mediocre or unsuccessful in net returns to their owners, it was found that three out of three buildings were not remodeled to any degree, although all three cases clearly indicated that such an operation was needed. Furthermore, two of these three buildings were maintained in a state of quite indifferent repair.

For ready comparison of the essential facts brought out in this analysis the findings are recapitulated in Table (5).

It may be concluded that *a total of 67 per cent of the older but successful buildings has been extensively and intelligently modernized and remodeled, and the same proportion is maintained in good repair, while nearly 87 per cent of the older but less successful buildings have not been so modernized and that 60 per cent of these are not maintained in adequate repair.*

While there are other factors involved (such as unfavorable location within the district where the building is located or a top-heavy condition of the financing and capital structure) which contribute to or influence the result, nevertheless the sheer weight of these proportions speaks for itself as to the

TABLE (6): ANALYSIS OF THE EFFECT OF THE LEVEL OF CONSTRUCTION COSTS ON THE FINANCIAL RETURN OF OFFICE BUILDINGS.

Age Group	Ranges of Building	Approximate Average Cost Index for the Buildings in the Group —Engineering News-Record, 1913 = 100%	Percentages of Successful Buildings	Percentages of Unsuccessful Buildings
D_1	1883-1899	75%	60%	20%
D_2	1900-1912	93%	43%	57%
C	1913-1917	101%	40%	60%
A*	1928-1931	196%	22%*	22%
B	1922-1927	204%	36%	57%

(Age Groups in the order of average cost indexes for the buildings.)

*NOTE—This group, owing to the fact that a large proportion has been completed recently, has a low percentage of successful buildings and the maximum percentage of indeterminate buildings, in this case 33 1/3%.

These age groups have been arranged considering the major changes in the levels of construction costs; the "Index of Construction Cost in Eastern Cities," published by *The Engineering News-Record*, was used as a standard. This graph of the levels of construction costs included the years 1885 to 1929. In order to bring this up to date, the indices published by the same authorities, but covering the entire United States, were used for the years 1930 to 1931, since comparison of the figures for the United States and typical Eastern cities showed a marked similarity and afforded a guide sufficiently accurate for the purpose of this study.

value of remodeling and modernization as an effective means of prolonging the useful and profitable life of office buildings.

Applicability to Other Building Types

Office-building projects in general, if only for their mere size and magnitude, usually receive more care in initial planning than most other types of structures. In most cities more is known of the market conditions of office space than of other forms of real estate improvement; consequently the buildings are usually designed to fulfill the conditions of demand. Styles and fashions in office buildings have been less subject to the drastic changes found in design of stores, hotels, apartments, residences, and the various types of industrial or factory buildings, where modes of living, new services available and more efficient processes of manufacture have rendered older buildings more rapidly obsolete. For these reasons it may be assumed with reasonable accuracy that any process which shows substantial benefits in the field of office-building economics and management not only is applicable likewise to other types and kinds of structures, but is likely to apply with an even greater force. The store in particular is a good illustration since, with the exception of extreme cases where the entire shopping district and patronage has moved elsewhere, any improvement which enables a building to attract customers to its doors will enhance the value of the property due to the increased volume of potential trade, a factor that in turn is reflected in increased earnings and profits for the tenant or owner-occupant. Obviously, any enhancement in possibility of profit warrants an increase in rental and in value for the property and warrants commensurate additional capital expenditure in achieving such results.

An article by the late Col. William A. Starrett, published in the *Saturday Evening Post* shortly before his death, affords an interesting sidelight on the position of the office building. Colonel Starrett described how the office building had been a testing laboratory in which many advances in the art of building construction and many labor-saving devices, improvements and innovations had been developed; these developments, after demonstrating their economic worth in the skyscraper, extended their usefulness to the hotel, apartment, residence and even the urban row house or the suburban bungalow.

Thus, if the worth of remodeling and modernization is demonstrated in office buildings as a proving ground, the results may be applied to other fields with considerable assurance.

Varying Levels of Construction Costs

Another factor closely related to age which must be considered is the effect of the relative levels of commodity prices and building construction costs. This factor applies both to the original cost of buildings, land and other elements entering into initial costs, and also to the costs of later and additional capital investments. As will be shown shortly, this factor is one which has very considerably influenced the relatively high returns possible among the older buildings, for example, those of Group D in Table (2) where it may be seen that these buildings with an average age of 30 years are earning the highest average net returns on the equity investment of any of the age groups.

Table (6) shows the previously discussed age groups of buildings and the proportionate numbers of successful and unsuccessful buildings in each age group, omitting the indeterminate and the mediocre buildings from the reckoning. The age group D, including the buildings completed between 1883 and 1912, has been subdivided into two sections with 1889-1900 as a dividing point. The approximate cost indices shown are not the averages based upon the years in the periods shown, but rather are the averages of the cost indices for the years in which the individual buildings were placed under contract. Thus in cases where two or more buildings were placed under contract in the same year, the index of that year is used two or more times, and in the event that no building was placed under contract in a given year, the index of that year is omitted in arriving at the averages tabulated.

It may be seen from this table that there is an inverse relationship between the average level of construction costs for the buildings in any group and the proportion of successful buildings in that group, with the exception of Group A, which includes the recently opened buildings. Thus, Group D_1 with the lowest cost index for the buildings included in it, has the highest percentage of successful buildings, while Group B with the highest cost index has the lowest proportion of successful buildings in it, with the exception of Group A. Further, it may be seen that the other groups between these two extremes, with the exception noted, substantiate the general finding that *the lower the cost index for the group, the higher the proportion of successful buildings in it.*

Thus, while there are other factors contributing to the success or failure of office buildings, the relative level of building construction costs has a very marked effect and bearing on the financial returns. Carrying this one step further, the level of costs is likewise a very potent factor to be considered in remodeling and modernization programs, since if initial expenditures and investment at times of low-cost levels operate favorably on the later financial success of a building, an investment for modernization under similar conditions should likewise be favorable and productive of tangible results. Since the level of building construction cost is now lower than it has been since 1916 there is every reason to take advantage of this condition and bring the older buildings up to present-day standards of efficiency and convenience and into aggressive competition with the newer and more modern structures. Even though rentals in the older buildings will be below the levels in the newer structures, this condition will be offset by the fact that the investment in the older buildings will be lower than the investment in the newer buildings, and the additional capital expenditures can be made at distinctly favorable terms, affording in many cases a possible margin for excellent returns.

Shifting Business Centers

Another consideration that should have some weight is the tendency of districts and centers for various types and kinds of business to shift to other parts of the city. While the basic causes of these shifts, which may be observed in nearly every American city, are very complex and the result of a number of conditions often acting in combination, nevertheless obsolete and shabby buildings are among the contributing causes, lessening the attraction of the existing location or center and permitting tenants and their clientele to be more open to the attractions of some other district. If the growth of a section tends to become static or to recede, as indicated by rental rates and vacancies, an aggressive policy of renovation and modernization may serve to arrest movement before such a shift can get well under way. Otherwise, if this is postponed too long, both prevention and cure are generally futile.

An individual building, or groups of buildings, or even the entire district as a whole, may reach a crossroads in the course of a useful and profitable life span, a time when a constructive program of improvements will strengthen the position and prestige of the individual structures themselves and their section or district, enabling them to compete effectively with other sections and with newer buildings. Indeed, an aggressive program of improvements may even curtail or discourage additional competitive construction.

The value of concerted action by the owners of older and semi-obsolete buildings can have another very far-reaching, even though indirect effect, not only on their own buildings and district, but even on the business conditions of their community. Values of properties are reduced because the number of potential tenants and their earnings are reduced and also because there are relatively few willing purchasers for properties—all factors attributable to the present state of business. While it cannot be expected that remodeling and modernization of properties would alone lead the way out of the present stalemate, such a program would go far towards the restoration of confidence, the recirculation of money and the increase of employment. Banking interests could aid such a program to a considerable degree by granting legitimate credit to modernization projects which are conservatively conceived and soundly planned after comprehensive surveys and studies. Inasmuch as one of the first things usually undertaken by one of the farsighted large lending institutions, when it has become necessary to take over a property, is to remodel and modernize the property in a thorough and adequate manner, it might be well to consider such a program before the property reaches a stage of default. The benefits of such a policy would appear obvious, but in carrying this out there would be required of the lending institution more control and supervision of the conditions of the properties on which money is loaned, and of the owner-borrowers additional cooperation in assuring the future of investments by setting up adequate depreciation allowances and actually using the sums thus obtained in keeping their holdings in a condition approximating the requirements and demands of the current market.

Although thorough modernization has proven its worth among a group of older buildings studied, it should be remembered that depreciation and obsolescence are continuously taking a very happy toll of values, and buildings considered new a few years ago are progressing towards a critical age and point in the span of their useful and profitable life. From the buildings studied, the law of averages would indicate that the chances of a long economic life are small unless decided efforts are made to keep these buildings attractive to tenants in the unusually keen competition of the present market. The architect acquainted with the possibilities of remodeling is in a peculiarly advantageous position to secure and assure benefits to property owners,

(Continued on page 34, advertising section)

LIBRARY ALTERATIONS

THOMAS WILLIAMS, Architect

E. A. VARNEY, Engineer

New Building

JEFFRIES POINT BRANCH, BOSTON PUBLIC LIBRARY
THOMAS WILLIAMS, ARCHITECT; E. A. VARNEY, ENGINEER

Old Building

Second Floor Plan.

JEFFRIES POINT BRANCH

AN ALTERATION FOR THE BOSTON PUBLIC LIBRARY

THOMAS WILLIAMS, Architect

E. A. VARNEY, Engineer

I The Problem

To replace a branch library situated in inadequate rented quarters

1. Serving a poor district of stationary population
   (a) Circulation chiefly among children
   (b) Heavy book losses
2. Capacity: 7,000 books; 55 reading-room seats

II Requirements

A. Reading rooms for children and adults
   1. Need for separation of reading room
      (a) Children's room used for study by noisy group
   2. Importance of control
      (a) Heavy book losses necessitate complete supervision of exit.
   3. Book storage and seating capacity
      (a) To be increased as much as possible over old quarters.
      (b) Open shelf system
         1. Book storage room in basement only for books in slight demand

B. Librarians' rooms
   1. Office
   2. Rest room with kitchen and toilet
   3. Work room for book repairs

C. Boiler room

III The Solution

A. Reading rooms located on first and second floors of main portion of building
   1. Clear floor space provided by
      (a) Removal of party wall
      (b) Moving of entrance and stair
   2. High children's reading room on second floor secured by
      (a) Removal of attic floor and reframing of roof

B. Librarians' rooms housed in rear extension

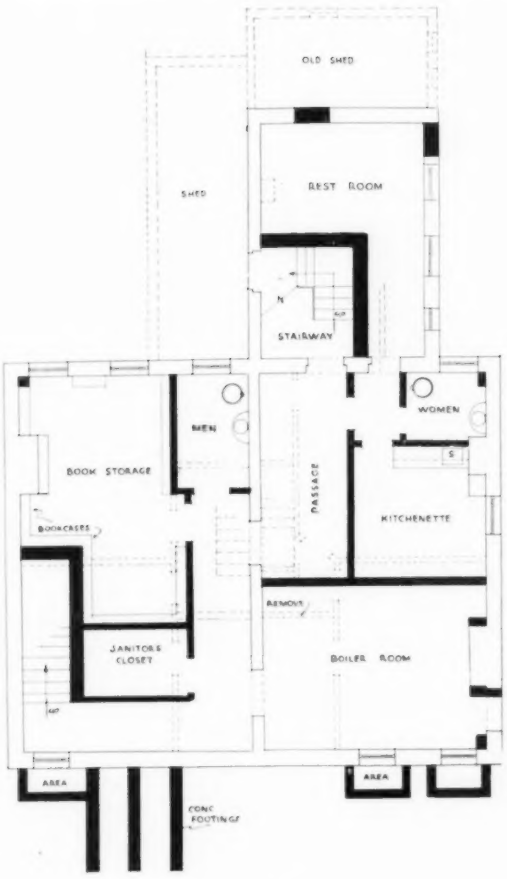
C. Boiler room and book storage in basement of main portion of building

D Capacity: 12,576 books; 83 reading-room seats

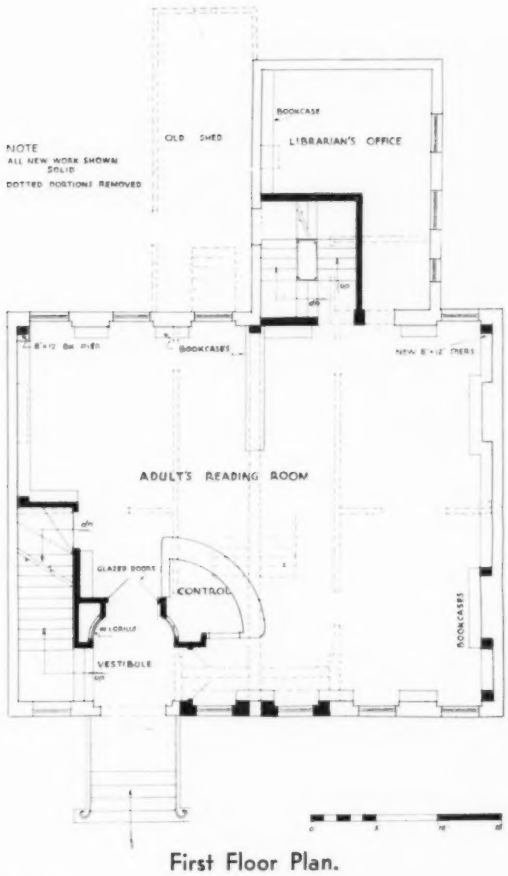
Weber CHILDREN'S READING ROOM

Weber CHILDREN'S READING ROOM

Weber ADULTS' READING ROOM



Basement Plan.



First Floor Plan.

JEFFRIES POINT BRANCH

AN ALTERATION FOR THE BOSTON PUBLIC LIBRARY

THOMAS WILLIAMS, ARCHITECT; E. A. VARNEY, ENGINEER

CONSTRUCTION DETAILS

One of the difficulties of this problem of a structural nature was the fact that the existing building was not owned by the new owners during the preliminary work, and also that it was occupied as a residence during this time. This made it difficult to take field measurements, and to remove plaster to ascertain existing conditions.

A second feature was the fact that a change in the type of occupancy introduced problems. Building code regulations allow a 50 lb. live load for residential occupancy, but require a 100 lb. live load for libraries. Also 8" brick bearing walls are permissible for residential construction, but not for heavier types of occupancy. Thus it was necessary to re-frame the floors and to keep the floor and roof loads off 8" walls.

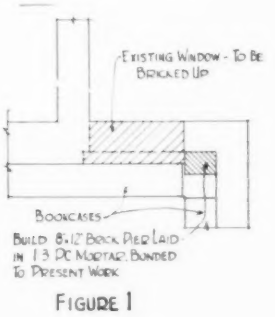
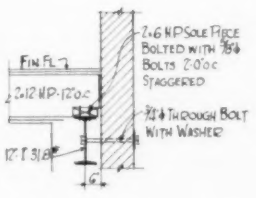


FIGURE 1



SECTION A-A

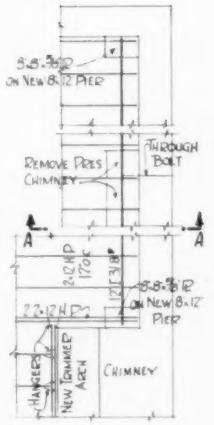


FIGURE 2

For vertical supports it was found cheaper to bond new piers into the present work (as illustrated in Figure 1) than to introduce columns. The floor loads were supported by steel beams resting on the piers, as illustrated in Figure 2.

JEFFRIES POINT BRANCH

An Alteration for the Boston Public Library

ANALYSIS OF UNIT COSTS ON BASIS OF CONTRACT FIGURE, SHOWING INCREASES IN COSTS FROM ALLOWANCE FOR VALUE OF BUILDING ON SITE

Basis of Figuring	Cost	Floor Area Sq. Ft.	Volume Cu. Ft.	Book Capacity	Seating Capacity of Reading Rms.	Cost per Sq. Ft. of Floor Area	Cost per Cu. Ft.	Cost per Book	Cost per Seat in Reading Rms.
Construction Cost.	$19,806.66					$4.18	$0.38	$1.58	$238.39
Construction Cost Plus $2,000 for Building	$21,806.66	4740	51,780	12,576	83	$4.60	$0.42	$1.73	$262.73
Construction Cost Plus $4,000 for Building	$23,806.66					$5.02	$0.4534	$1.89	$284.42

Where property is bought for alteration purposes, the building is of importance. Perhaps more will be paid for such property than would be necessary to buy nearby property if one were erecting a new building instead of remodeling. The difference should be charged to building cost.

The above figures show how this item affects the building cost in this instance. The middle line, $2,000 for the building, is probably a fair estimate in this case.

The low ceiling heights make cubic cost high as compared with square foot cost.

PENNSYLVANIA DRUG COMPANY STORE, NEW YORK CITY

By ALLMON FORDYCE, Architect

(Continued from page 95)

during rush periods—at lunch, dinner and after the theater—thus keeping the front soda fountain busy all day.

The Coffee Room

The balcony around the center well of the store is developed as a space for eating more leisurely than at the soda fountains downstairs. Besides the customary ice cream, drinks, sandwiches, and salads, and light meals for matinee, tea, and after the theater crowds, there is a complete restaurant equipment for a luncheon and dinner.

THE ARCHITECTURAL PLAN

The essential aim of the design was to provide a simple background against which the displayed merchandise became the decoration. The lighting of the displays was of primary importance. Immediately after the merchandising plan was settled, the lighting engineers and craftsman were called in consultation with the architect and the scheme of lighting was determined.

EXTERIOR

Lighting—Blue Neon light of double intensity was used in decorative stripes and in the lettering of the names. The window displays are kept below eye level, and the interior is so illuminated that the passer-by has a clear vision of the interior of the store.

Materials—Black glass, aluminum, red Formica.

INTERIOR

Lighting—The position of the lighting units was determined by the displays, each being brilliantly illuminated. The aisle or public space was kept less intensely illuminated by using only reflected light.

Floors and Stairs—Black and yellow terrazzo with use of other colors as decorative focal spots at doors and stairs.

Walls and Columns of Store—Maple Flexwood waxed a natural yellow to give maximum warm light, striped with silver and vermilion.

Walls of Coffee Room—Salubra paper of yellow color, white enamel trim, blue Fabricoid on doors.

Ceiling under Balconies—Flat white reflecting surface.

Ceiling over the Well and Coffee Room—Aluminum leaf.

Fixtures—Bird's-eye maple woodwork, Belgian black marble base, chrome-steel trim, black linoleum on counter tops and steps of soda fountain, colored mirrors for shelves and lining of cases, vermilion aniline dye used for staining railings and lining of cases, plate-glass doors and shelves.

Tebbs and Knell

HOUSE OF MRS. NORMA T. JOHNSON

A COUNTRY HOUSE AT WATER MILL, L. I.

GOODWILLIE AND MORAN, Architects

The plot rolls gently from road to water, 16 acres in extent, on Long Island.

The house follows in its orientation a wide creek across the front, due north and south. Access is from the rear through a stair hall into a gallery across the bay front. This gallery terminates at one end in a living room and at the other in a dining room.

This relationship of the first-floor units was brought about by the fact that the second floor, with the all-important children's quarters (loggia, day and night nurseries, kitchenette and nurse's bedroom), set the plan which resulted in an asymmetrical development. Although a semblance of symmetry is attained by the use of quoins and bays, there is no actual symmetry on either elevation.

The house is built of old Virginia brick with wood trimmings and slate roof. All details have been carefully studied from authentic Georgian precedents; this is particularly noticeable in the two entrance features.

The use of ornamental ironwork has been featured in the design of the loggia rail, dining and sleeping porch and living-room porch. A trip through the lower east and west sides of New York City brought to light many examples of ironwork, one of which served as the inspiration for the living-room porch of elliptical shape. Careful drawings were made of salient features and place copies made of certain castings.

The interior finish of the various rooms follows closely the Georgian precedent. Details are bold rather than dainty in character. The gallery is finished in Adam green which is carried up the stairs; the handrail is mahogany. Certain ornamental features are picked out in dull gold and the flooring is of marbleized rubber with a compass pattern indicating the cardinal points.

The dining room is painted a *café au lait* color. Hardware and other fittings are of silver. The living room is paneled, floor to ceiling, in walnut with Grinling Gibbons carvings over doors and mantel. The billiard room has a knotty pine wainscot and trim, and a scenic paper in sepia tones; in conjunction is a complete kitchenette for informal entertaining.

The service part of the house is fitted with rubber tile floors, metal cabinets, white-metal and porcelain sinks, gas stove with mechanical ventilation and plate warmer. A servants' hall opens from the kitchen and leads to bedrooms with adjacent bath. Each bedroom has its individual basin. The house is equipped with a sewage disposal system, a combination vapor-heating garbage destructor and hot-water boiler, and a complete laundry unit of dryer, washing machines and ironer.

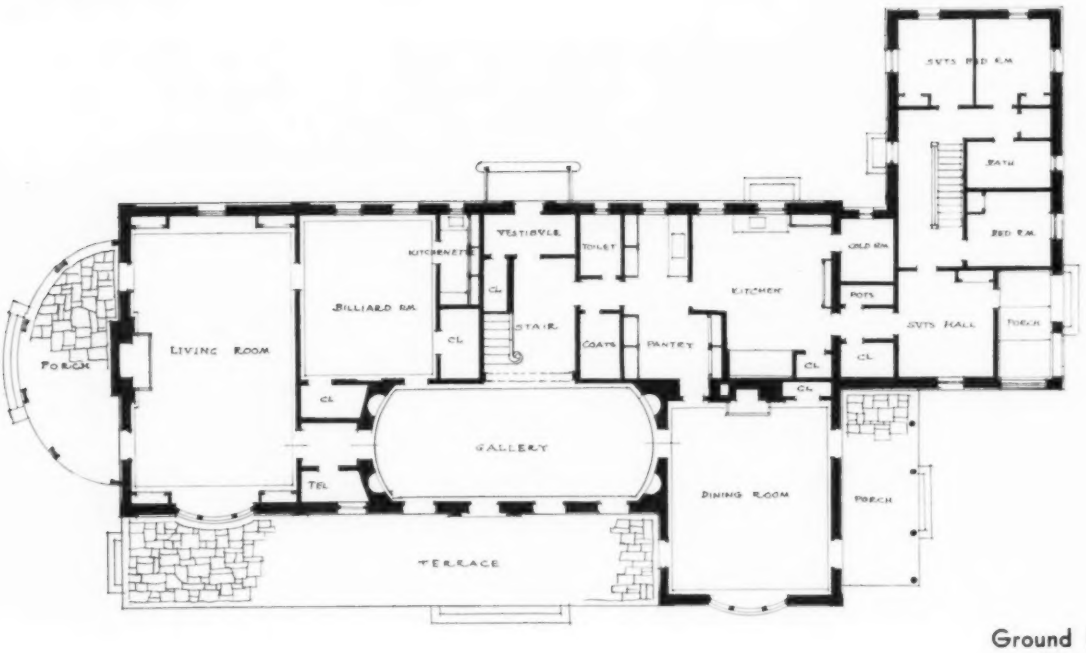
Tebbs and Knell

HOUSE OF MRS. NORMA T. JOHNSON
WATER MILL, LONG ISLAND
GOODWILLIE AND MORAN, ARCHITECTS

Drix Duryea

HOUSE OF MRS. NORMA T. JOHNSON
WATER MILL, LONG ISLAND
GOODWILLIE AND MORAN, ARCHITECTS

Tebbs and Knell



Ground Floor Plan.

HOUSE OF MRS. NORMA T. JOHNSON
WATER MILL, LONG ISLAND
GOODWILLIE AND MORAN, ARCHITECTS

Tebbs and Knell

HOUSE OF MRS. NORMA T. JOHNSON
WATER MILL, LONG ISLAND
GOODWILLIE AND MORAN, ARCHITECTS

Tebbs and Knell

Second Floor Plan.

HOUSE OF MRS. NORMA T. JOHNSON
WATER MILL, LONG ISLAND
GOODWILLIE AND MORAN, ARCHITECTS

PORTFOLIO OF SCHOOLS

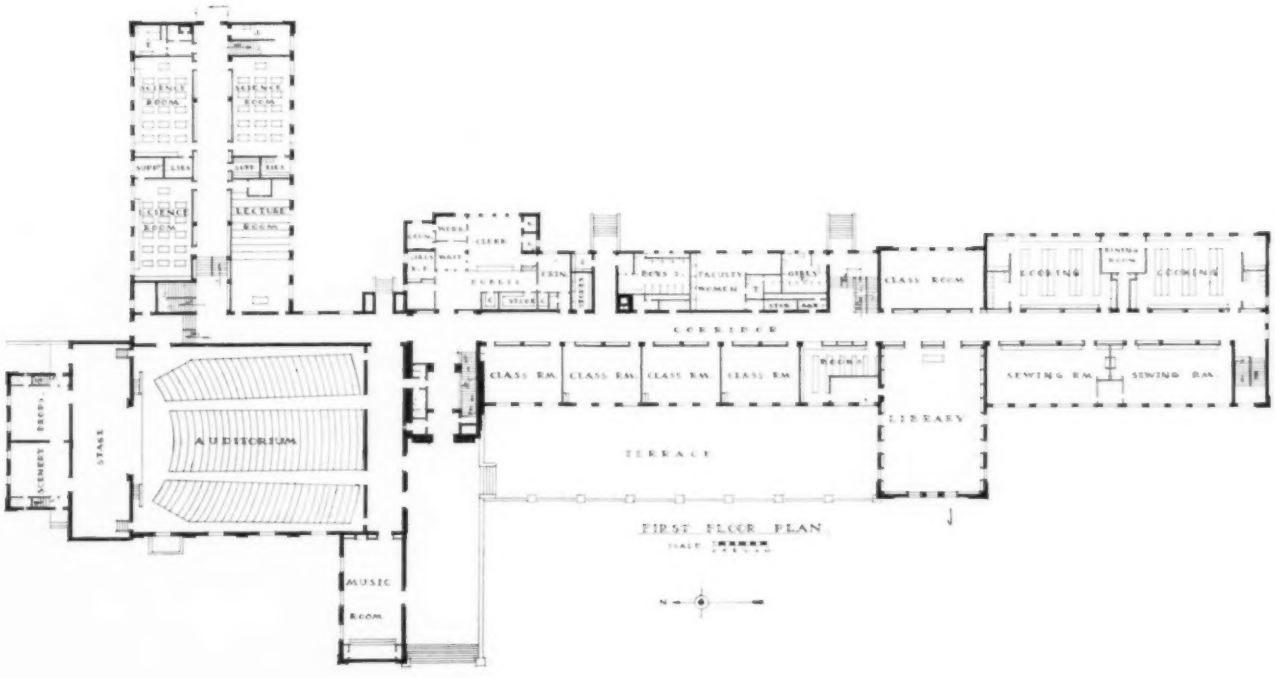
Hiller

CHARLES W. ELIOT JUNIOR HIGH SCHOOL

ALTADENA, CALIFORNIA

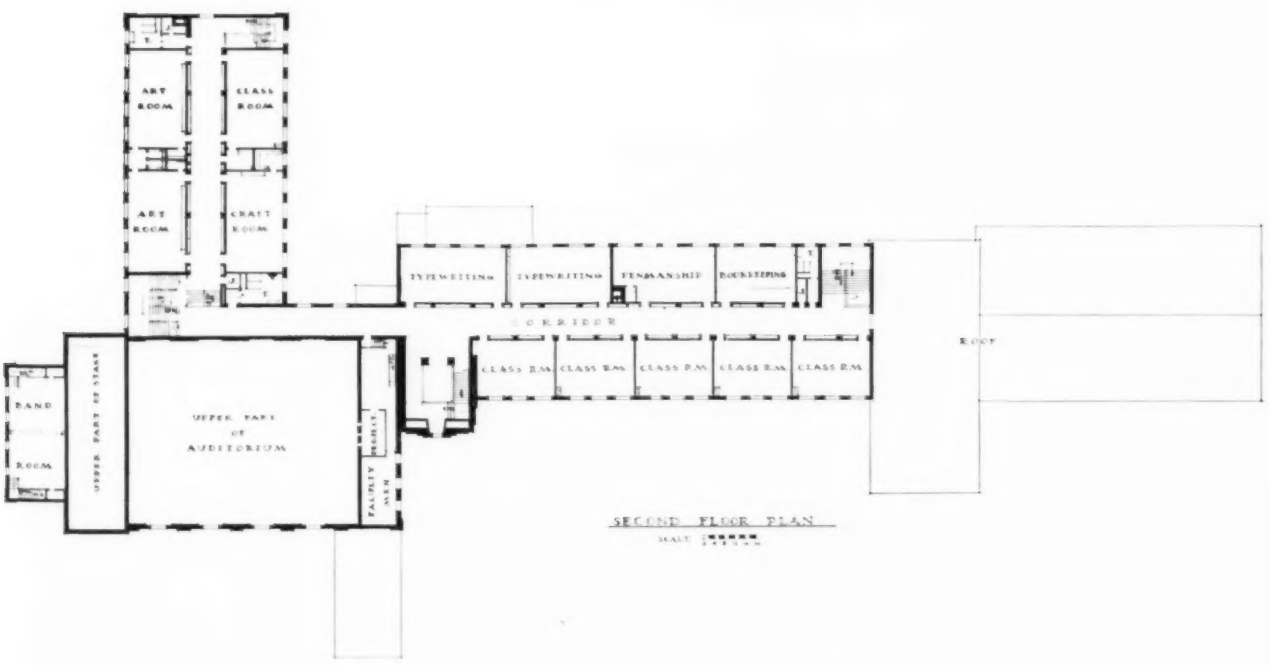
MARSTON AND MAYBURY, ARCHITECTS

Hiller

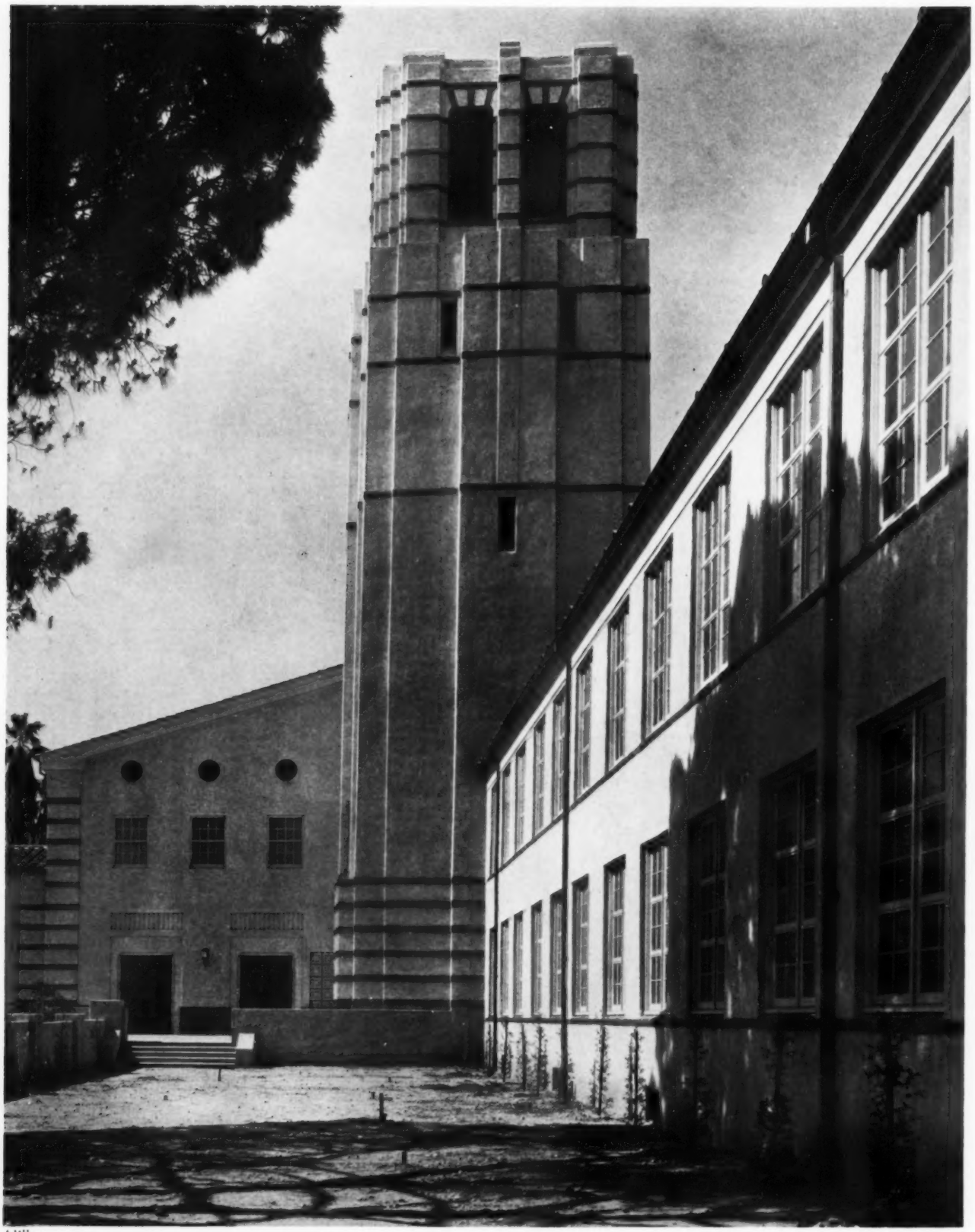


CHARLES W. ELIOT JUNIOR HIGH SCHOOL
ALTADENA, CALIFORNIA
MARSTON AND MAYBURY, ARCHITECTS

Hiller



CHARLES W. ELIOT JUNIOR HIGH SCHOOL
ALTADENA, CALIFORNIA
MARSTON AND MAYBURY, ARCHITECTS



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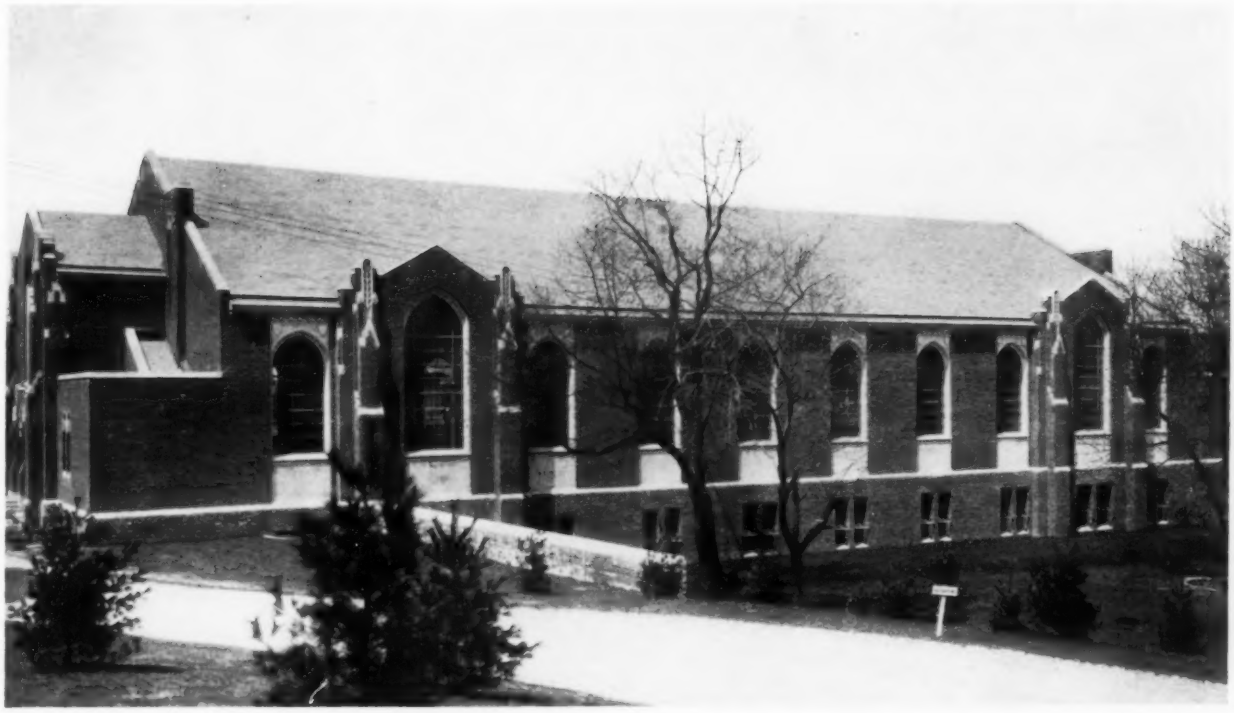
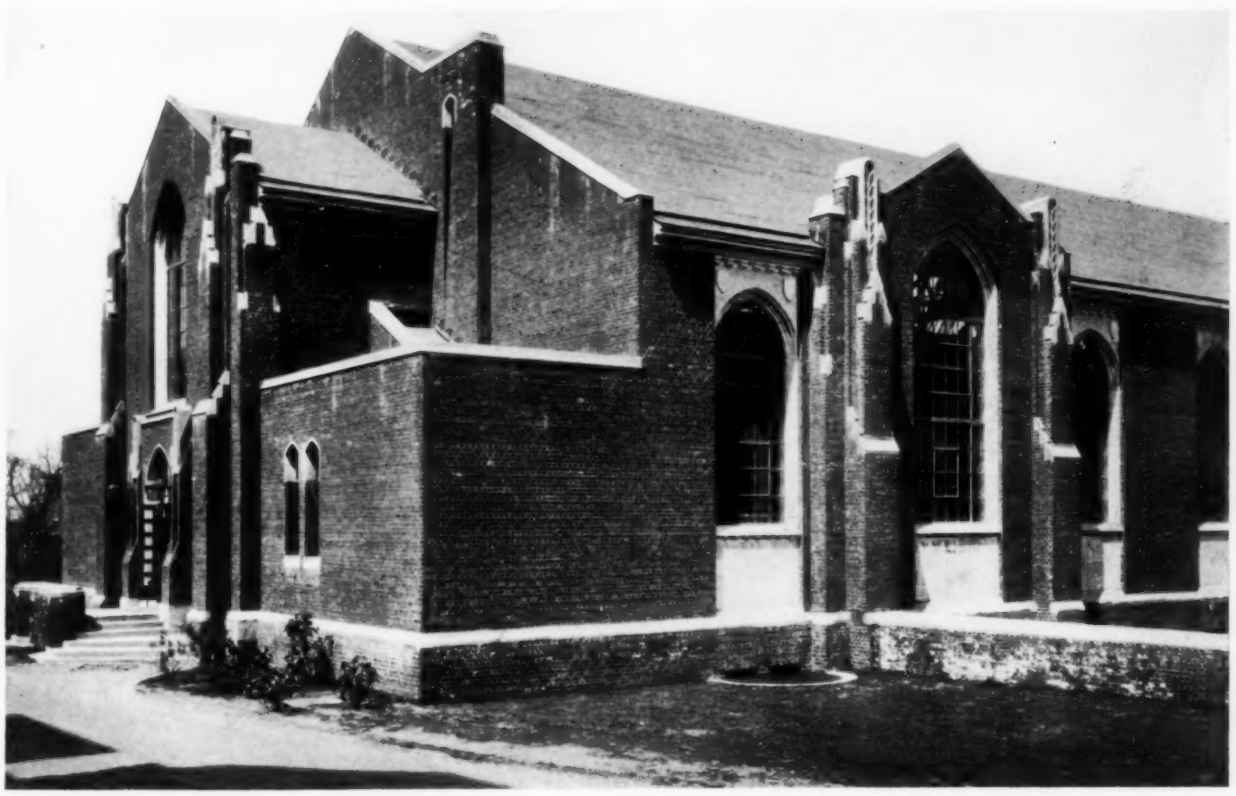
CHARLES W. ELIOT JUNIOR HIGH SCHOOL
ALTADENA, CALIFORNIA
MARSTON AND MAYBURY, ARCHITECTS

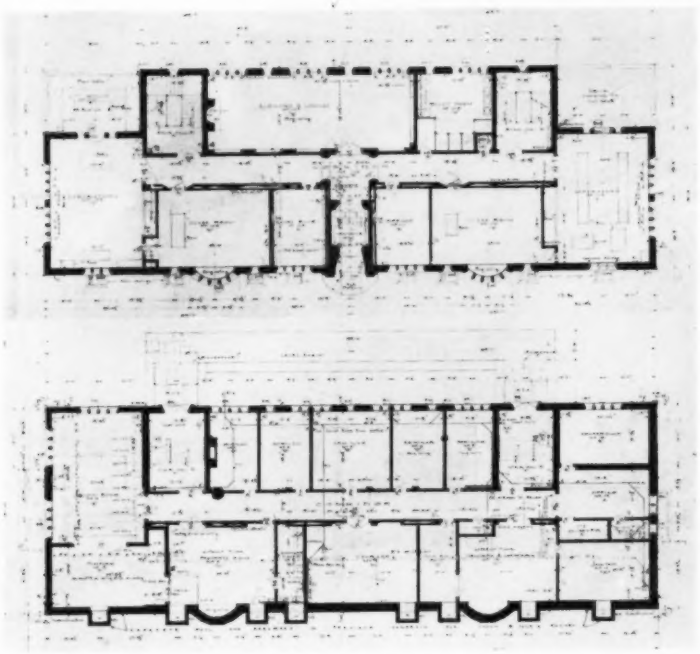




SWEENY GYMNASIUM
THE HILL SCHOOL IN POTTSTOWN, PA.
CHARLES Z. KLAUDER, ARCHITECT

FIRST FLOOR PLAN

SWEENY GYMNASIUM
THE HILL SCHOOL IN POTTSTOWN, PA.
CHARLES Z. KLAUDER, ARCHITECT



HARRY ELKINS WIDENER SCIENCE BUILDING
THE HILL SCHOOL IN POTTSTOWN, PA.
CHARLES Z. KLAUDER, ARCHITECT

HARRY ELKINS WIDENER SCIENCE BUILDING
THE HILL SCHOOL IN POTTSTOWN, PA.
CHARLES Z. KLAUDER, ARCHITECT

HARRY ELKINS WIDENER SCIENCE BUILDING
THE HILL SCHOOL IN POTTSTOWN, PA.
CHARLES Z. KLAUDER, ARCHITECT

Lemere and Company

Interior of Dormitory

The Junior King's School, Canterbury, England, was designed by two of the leading English architects for school work, Mr. Sydney Tatchell and Mr. Geoffrey C. Wilson.

The classrooms and dormitories are so designed as to harmonize with an adjacent Manor House, known as Surry Court. This house contains the survivals of the manor built in the 16th century. There is also a magnificent Tithe Barn of the Tudor period and an historic gateway.

The architects were asked to design new buildings for the accommodation of 75 boarders and 25 day boys.

The plan adopted was in the form of the letter H. On the one wing there are classrooms with dormitories above, and on the other classrooms. In time there is to be a dining room. The new buildings are of such proportion as to be in scale with the older buildings and brick and tile in harmony, both as regards texture and color, have been employed.

Lemere and Company

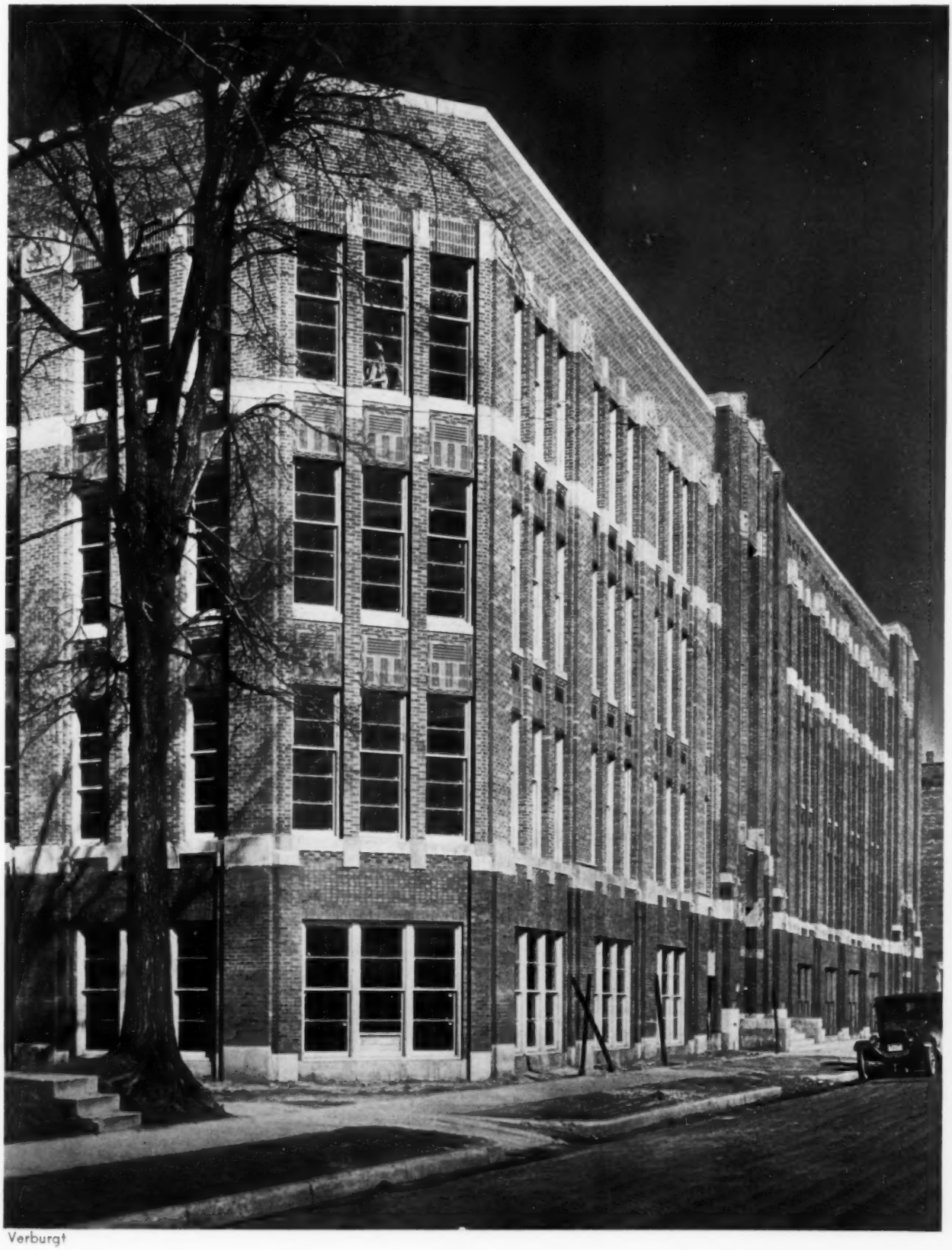
JUNIOR KING'S SCHOOL, CANTERBURY
MILNER COURT, KENT, ENGLAND
SYDNEY TATCHELL AND G. C. WILSON, ARCHITECTS

Vorburg

RACINE VOCATIONAL SCHOOL
RACINE, WISCONSIN
FRANK J. HOFFMAN, ARCHITECT

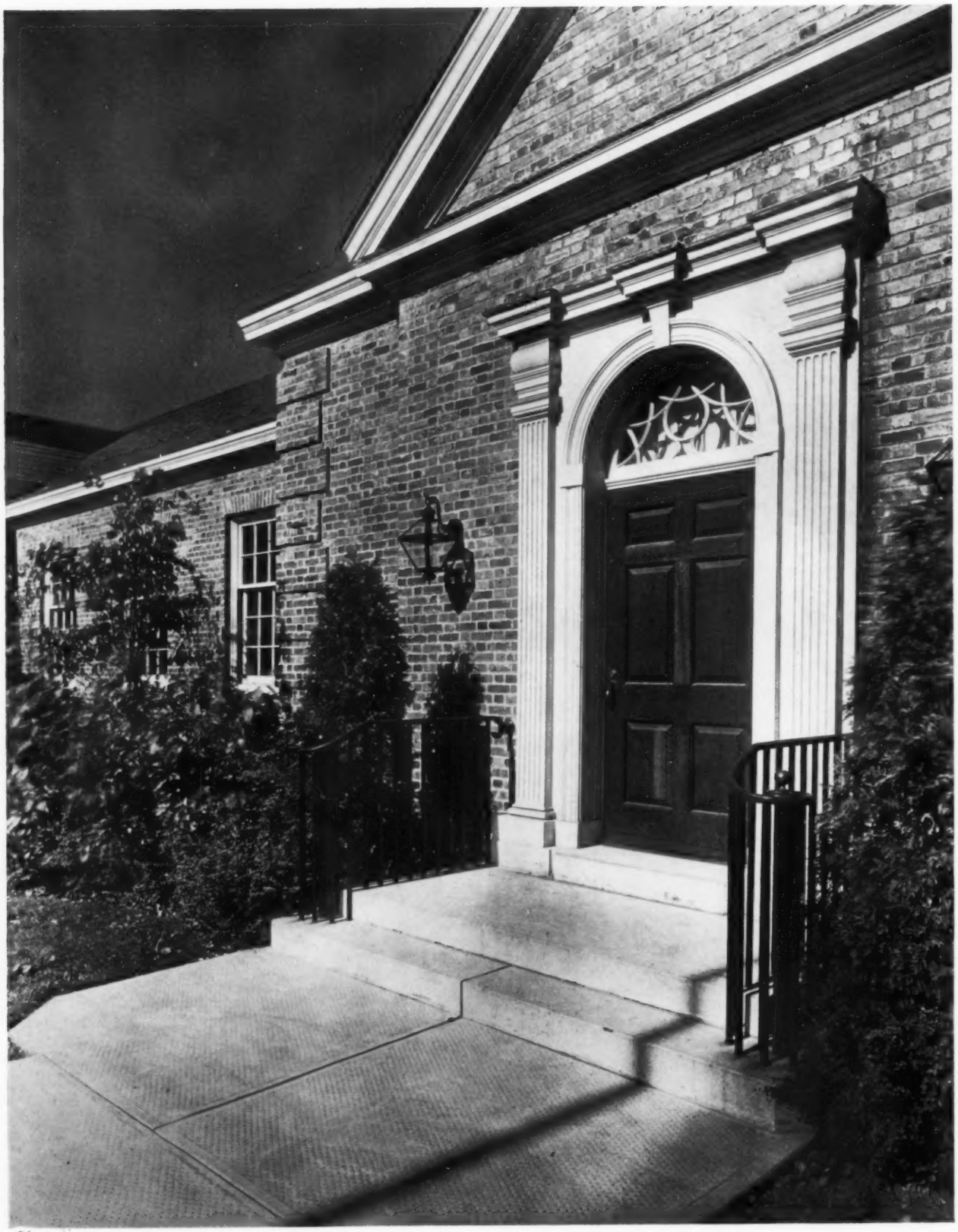
Verburgt

RACINE VOCATIONAL SCHOOL
RACINE, WISCONSIN
FRANK J. HOFFMAN, ARCHITECT



Verburgt

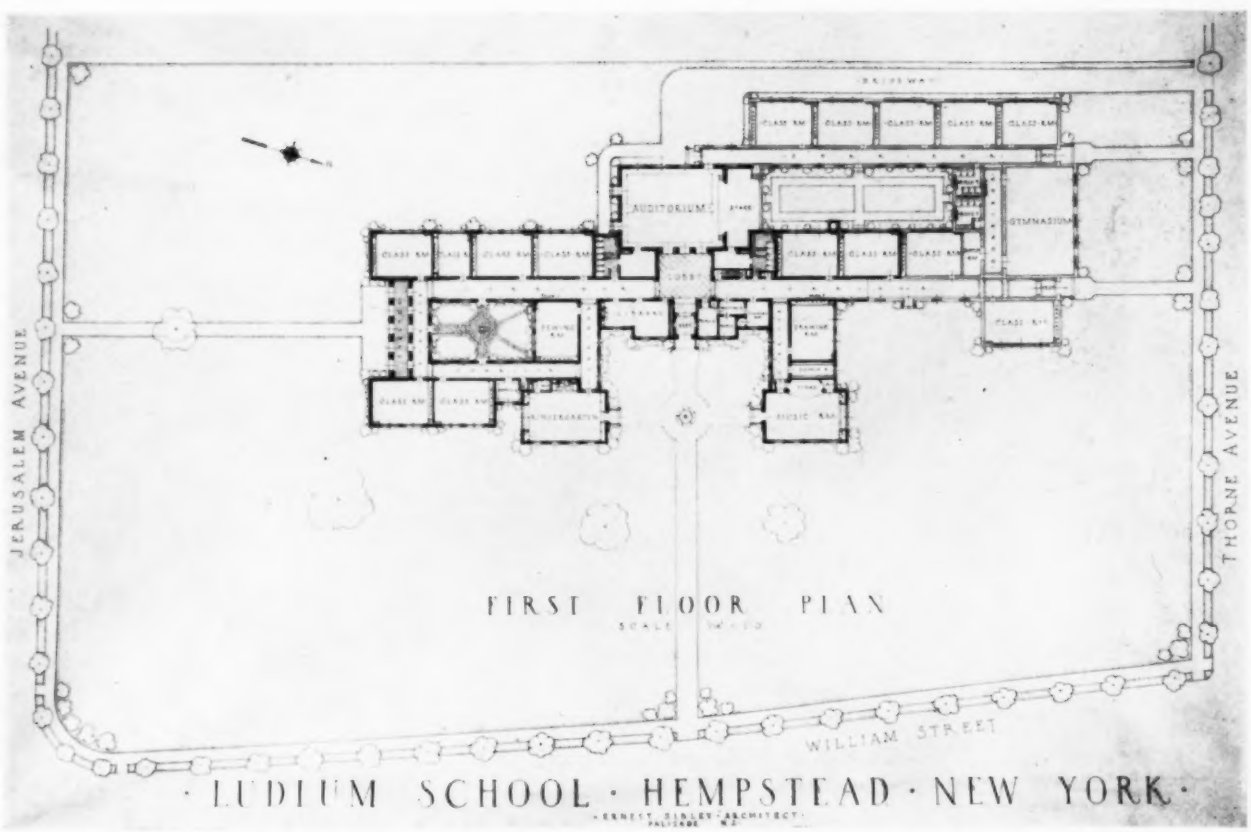
RACINE VOCATIONAL SCHOOL
RACINE, WISCONSIN
FRANK J. HOFFMAN, ARCHITECT



Glasgow

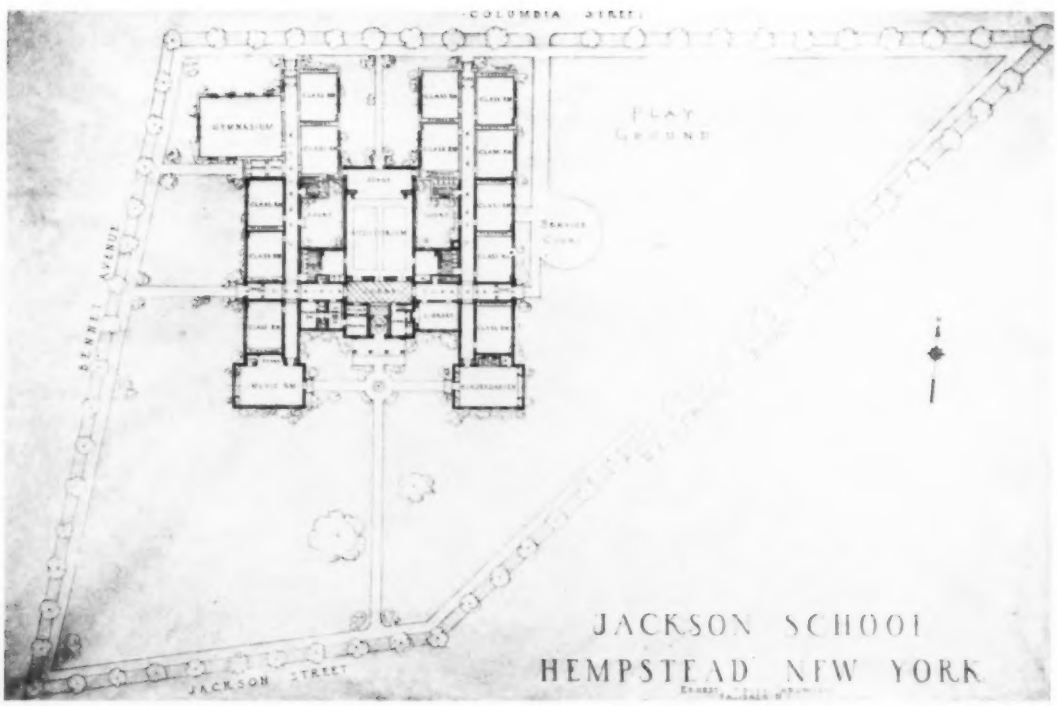
LUDLUM SCHOOL
HEMPSTEAD, NEW YORK
ERNEST SIBLEY, ARCHITECT

Glasgow



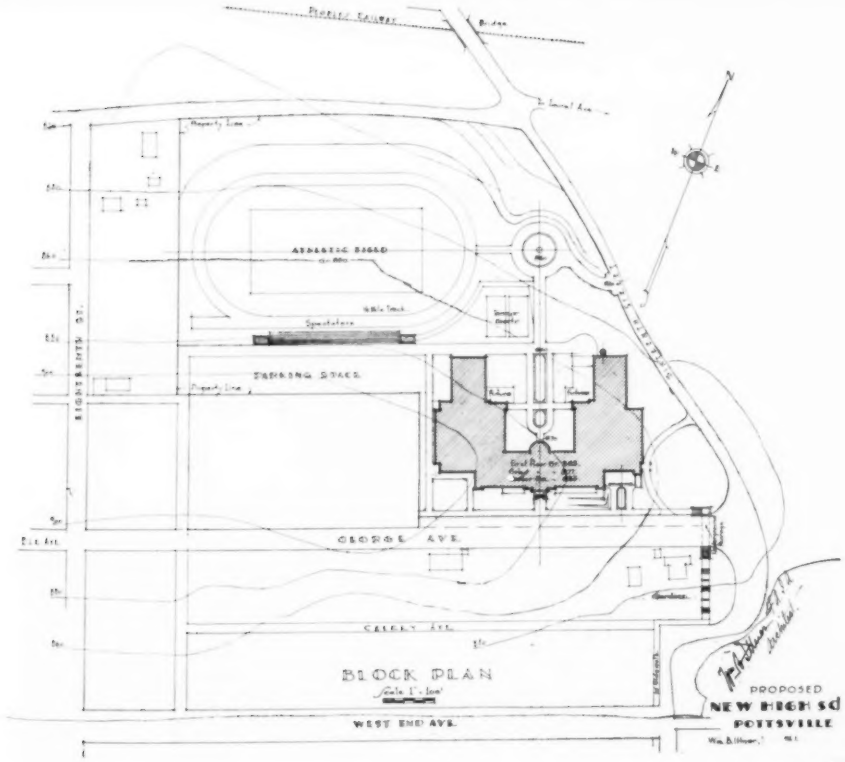
LUDLUM SCHOOL
HEMPSTEAD, NEW YORK
ERNEST SIBLEY, ARCHITECT

Glasgow



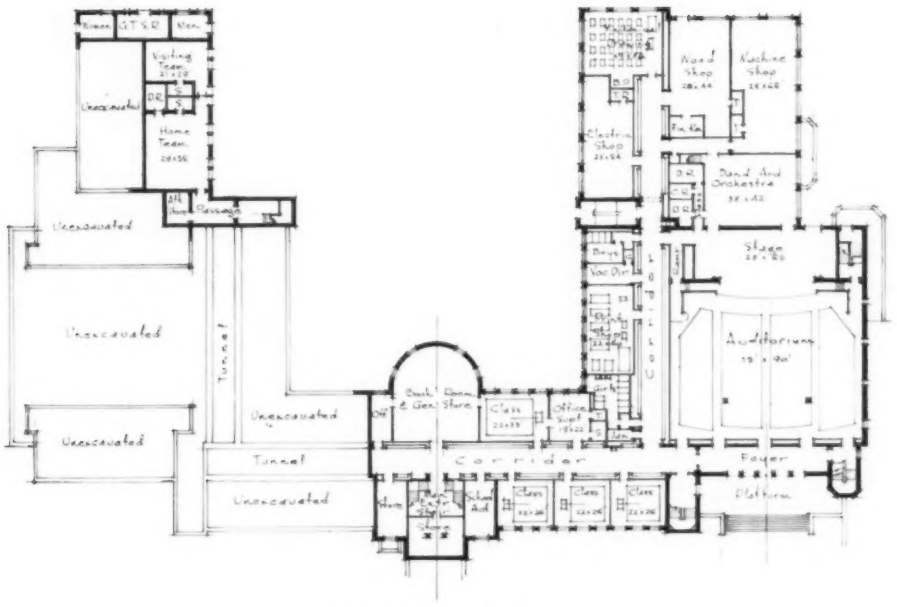
JACKSON SCHOOL
HEMPSTEAD, NEW YORK
ERNEST SIBLEY, ARCHITECT

Person's



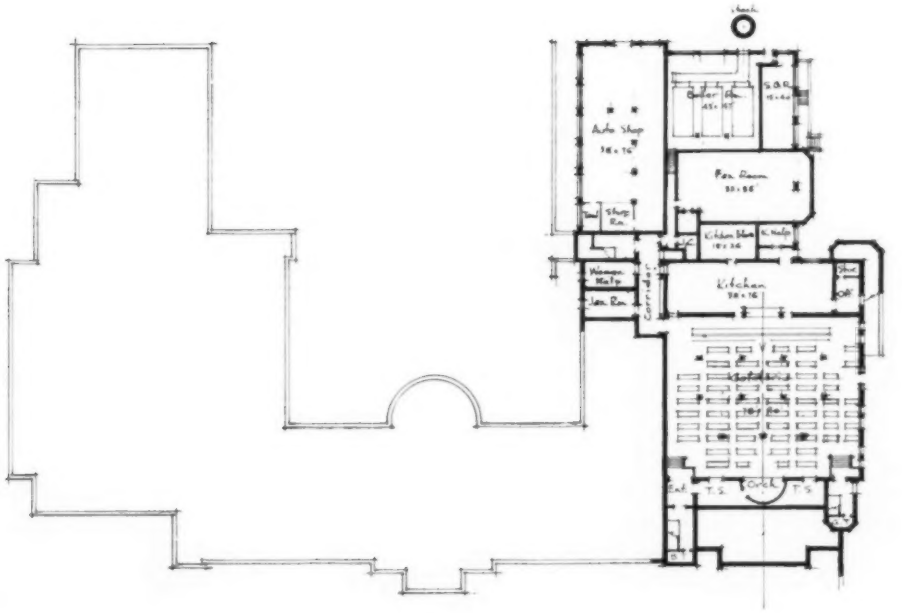
The Pottsville High School, now under construction, is on a seventeen-acre site. It will provide study and recreational facilities for 2,000 students. Approximate cost: $737,250.

HIGH SCHOOL, POTTSVILLE, PENNSYLVANIA
WILLIAM B. ITTNER, ARCHITECT
GROOTENBOER AND KNOBLOCH, ASSOCIATED



GROUND FLOOR PLAN

POTTSVILLE HIGH SCHOOL
POTTSVILLE, PA.
Wm. D. Hinar, P.A.I.A.-Registered Archt.-St. Louis, Mo.
D.H. Groeteboer } Associated
P.G. Knoblock } Registered Architects } Pottsville, Pa.



BASEMENT FLOOR PLAN

POTTSVILLE HIGH SCHOOL
POTTSVILLE, PA.
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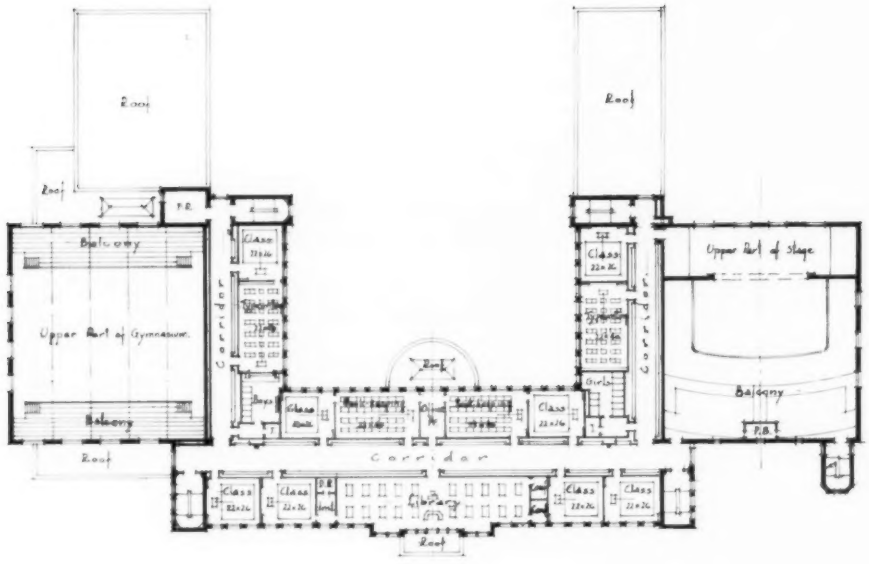
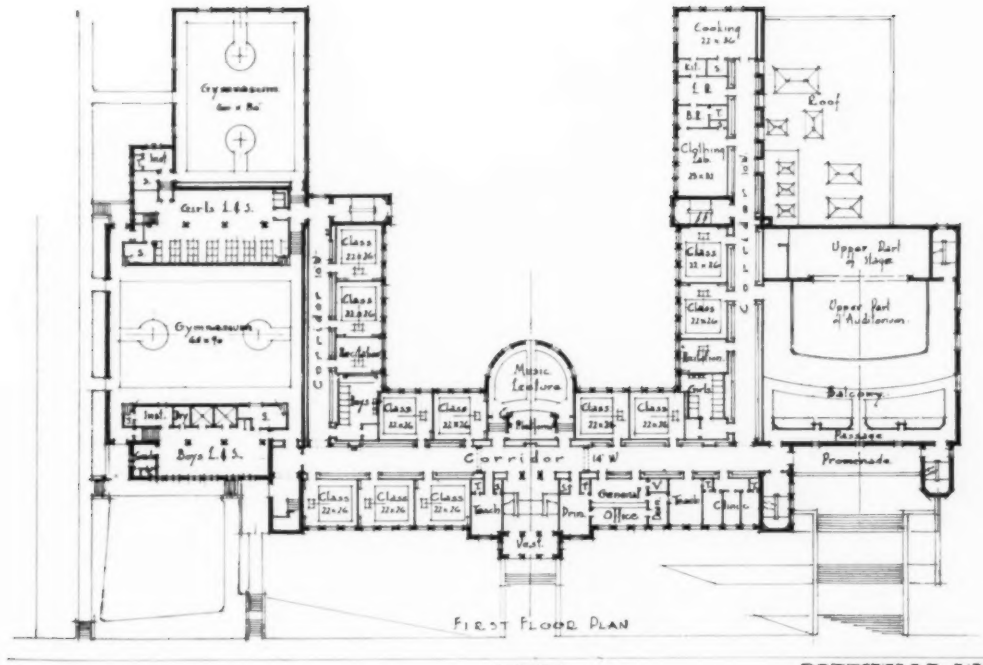
D.H. Groeteboer } Associated
P.G. Knoblock } Registered Architects } Pottsville, Pa.



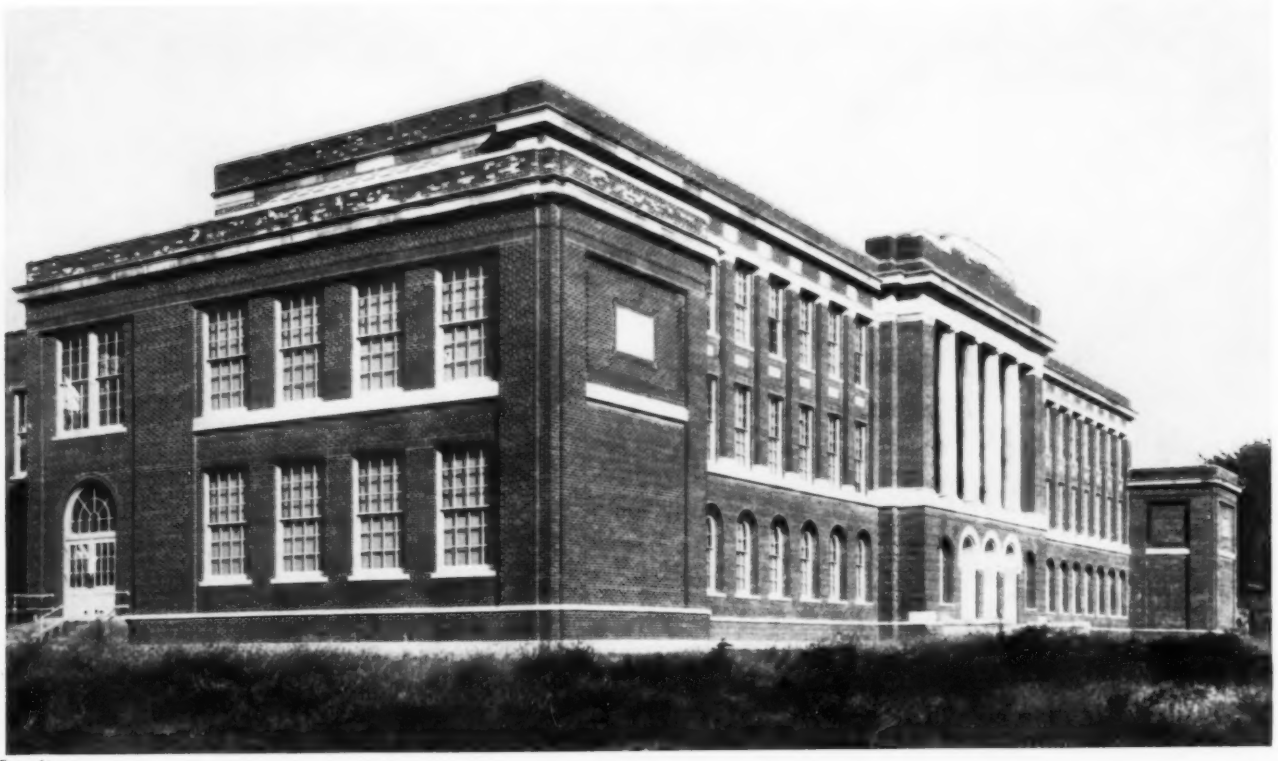
SECOND FLOOR PLAN

POTTSVILLE HIGH SCHOOL
POTTSVILLE, PA.
Wm. D. Ittner, F.A.I.A. - Registered Archt. - St. Louis, Mo.
D.H. Groskaufmann, R.G. Knablock } Associated Registered Architects { Pottsville, Pa.

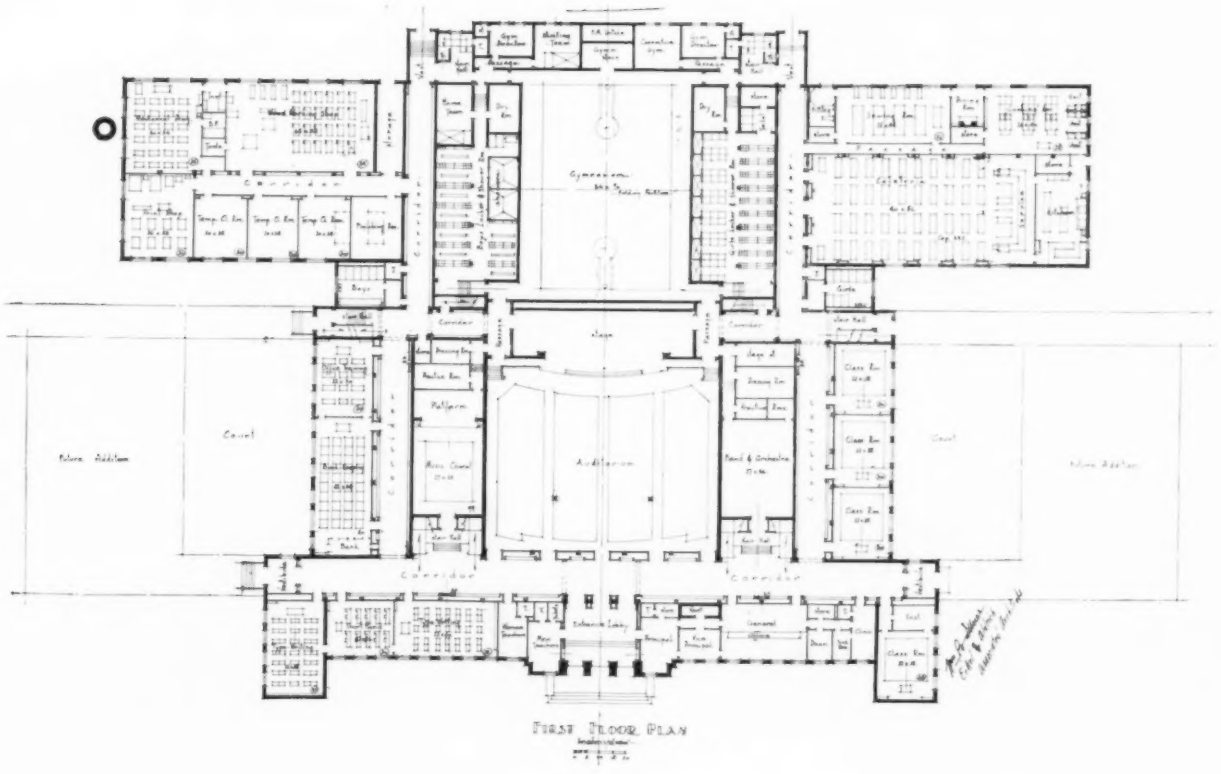


FIRST FLOOR PLAN

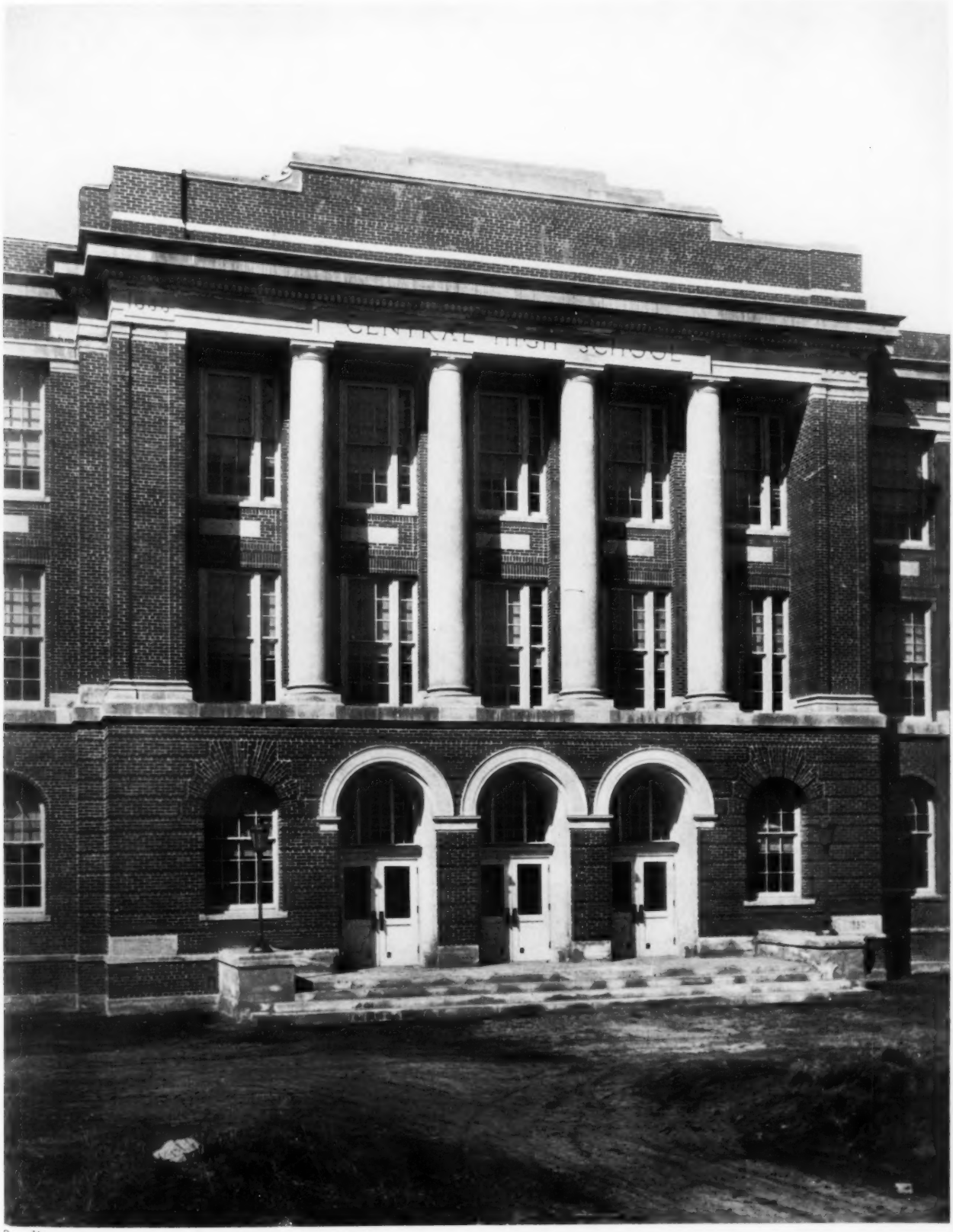
POTTSVILLE HIGH SCHOOL
POTTSVILLE, PA.
Wm. D. Ittner, F.A.I.A. - Registered Archt. - St. Louis, Mo.
D.H. Groskaufmann, R.G. Knablock } Associated Registered Architects { Pottsville, Pa.



Prawitz



CENTRAL HIGH SCHOOL, ST. JOSEPH, MO.
ECKEL AND ALDRICH, ARCHITECTS
WILLIAM B. ITTNER, ASSOCIATED



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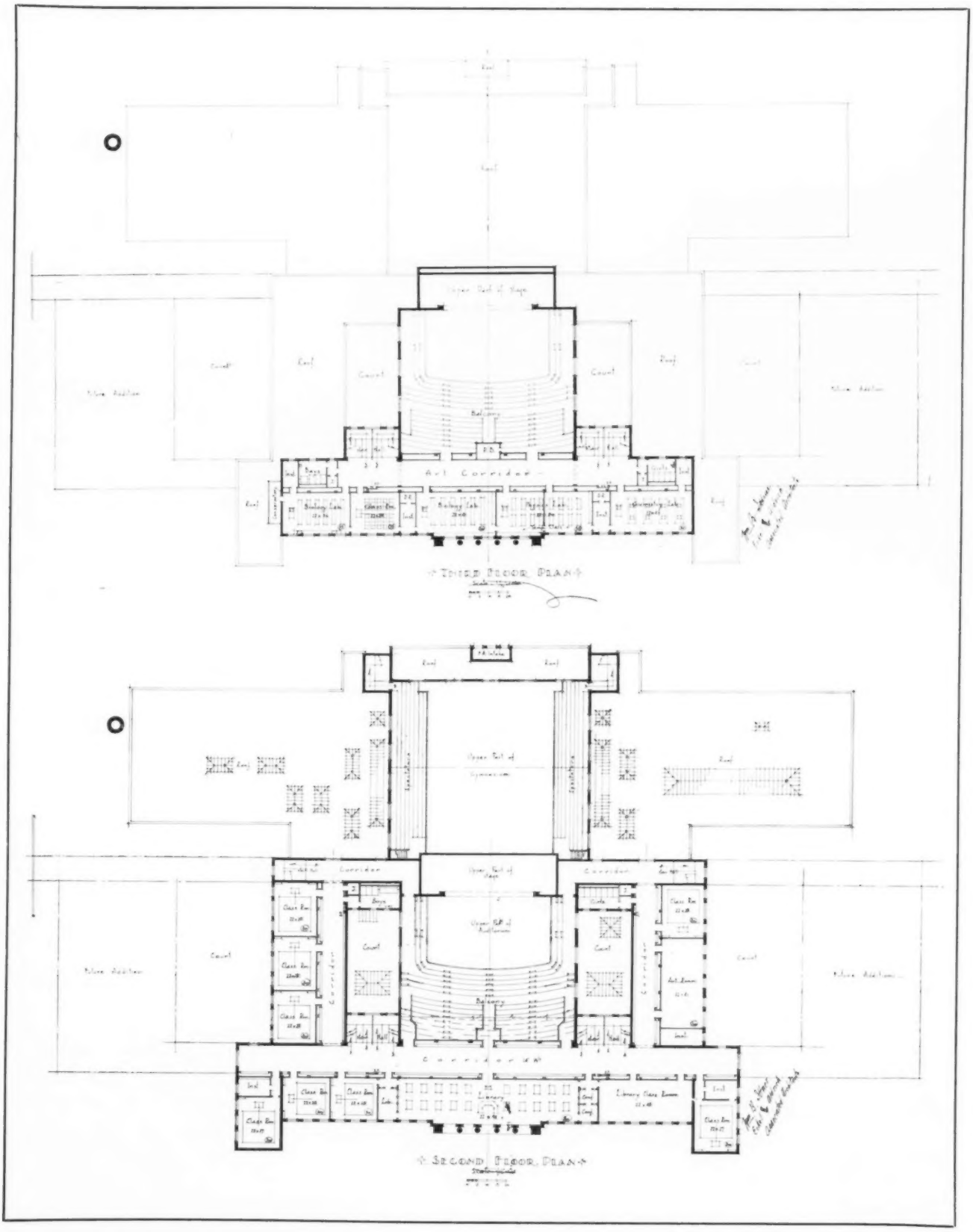
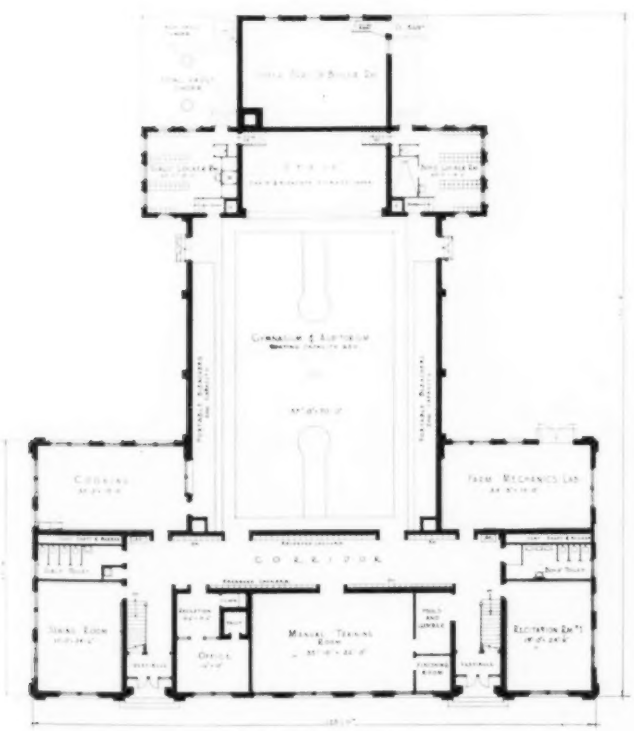
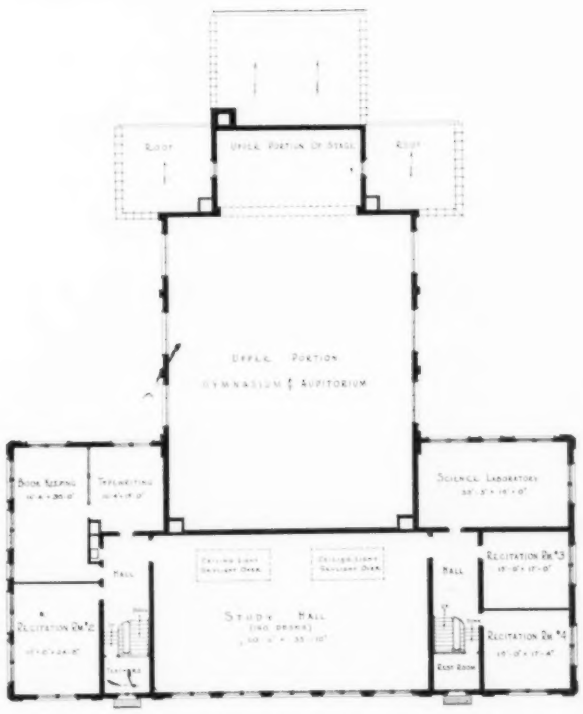
CENTRAL HIGH SCHOOL, ST. JOSEPH, MO.
ECKEL AND ALDRICH, ARCHITECTS
WILLIAM B. ITTNER, ASSOCIATED



CENTRAL HIGH SCHOOL, ST. JOSEPH, MO.
ECKEL AND ALDRICH, ARCHITECTS
WILLIAM B. ITTNER, ASSOCIATED

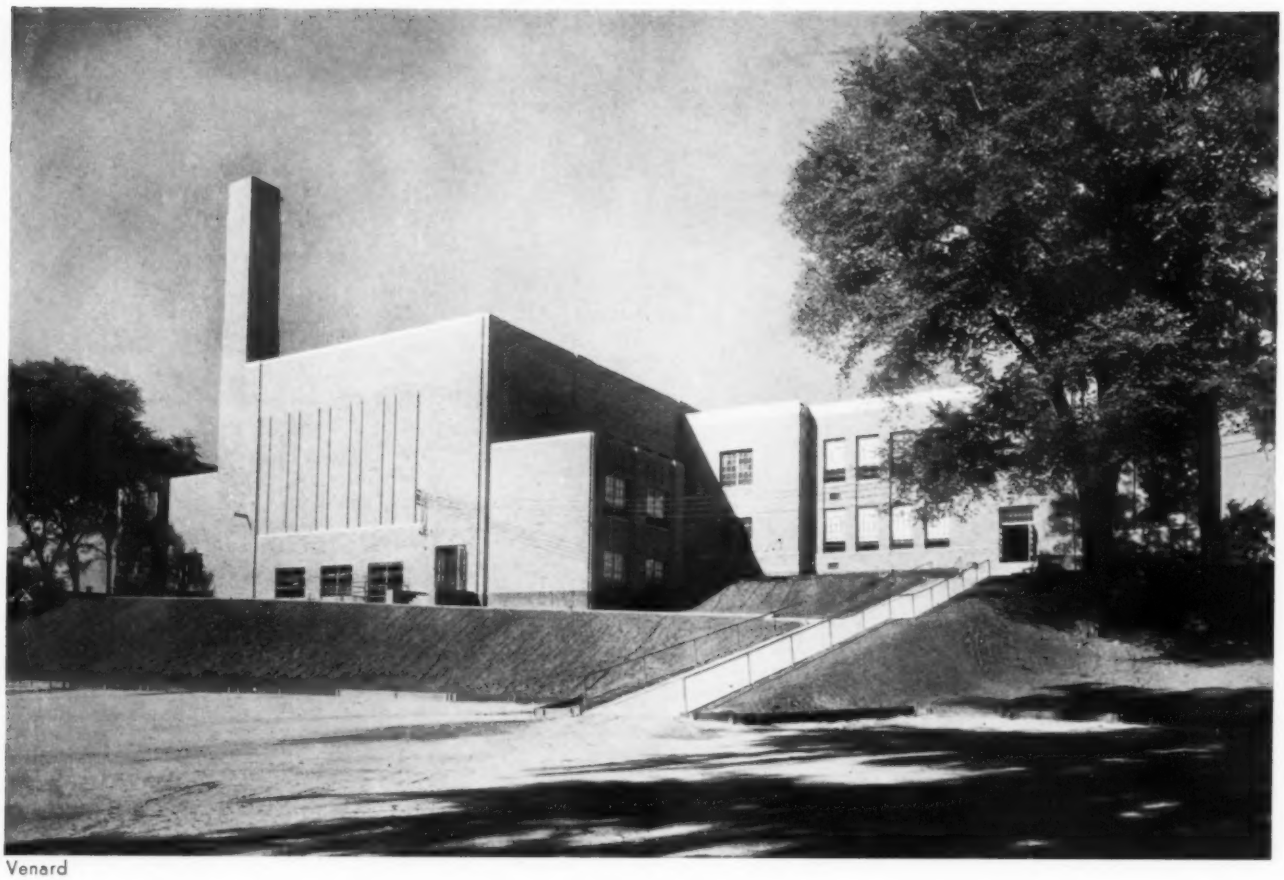


First Floor Plan

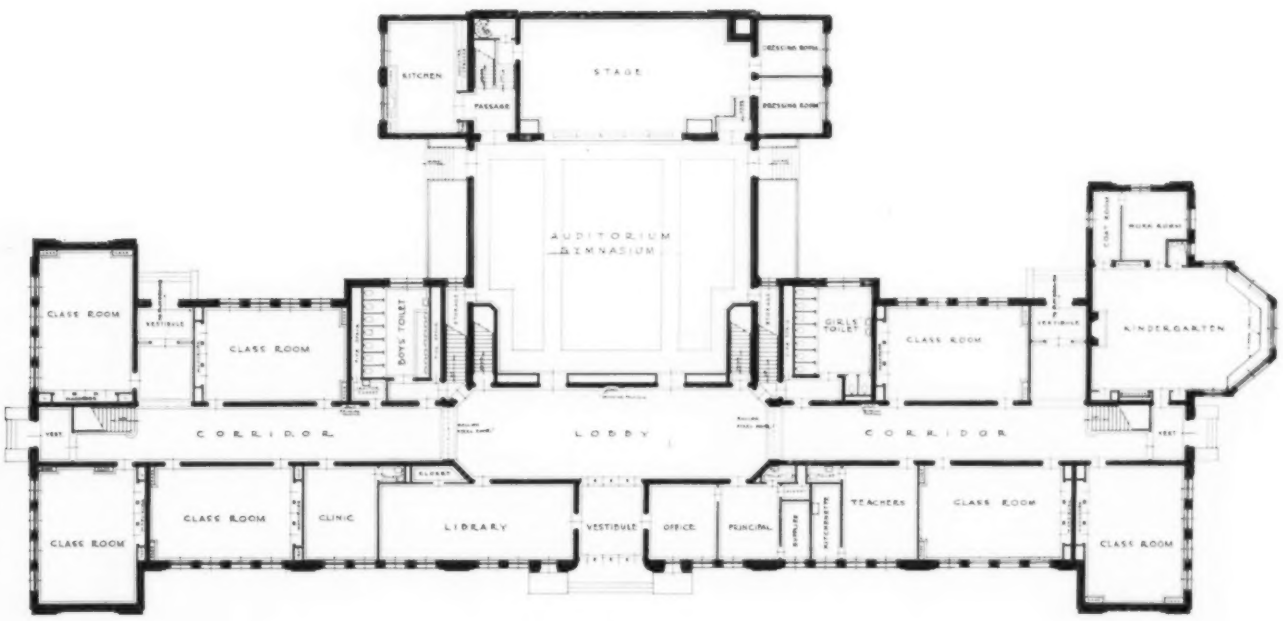


Second Floor Plan

BRADFORD TOWNSHIP HIGH SCHOOL
BRADFORD, ILLINOIS
HEWITT, EMERSON & GREGG, ARCHITECTS

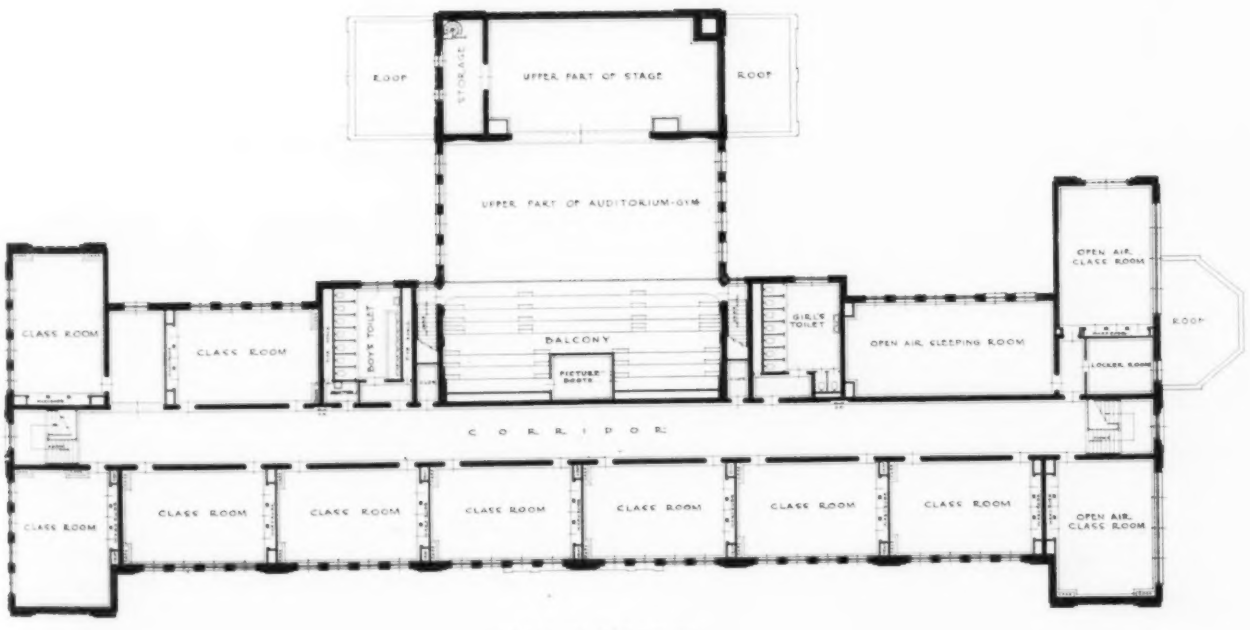


Venard



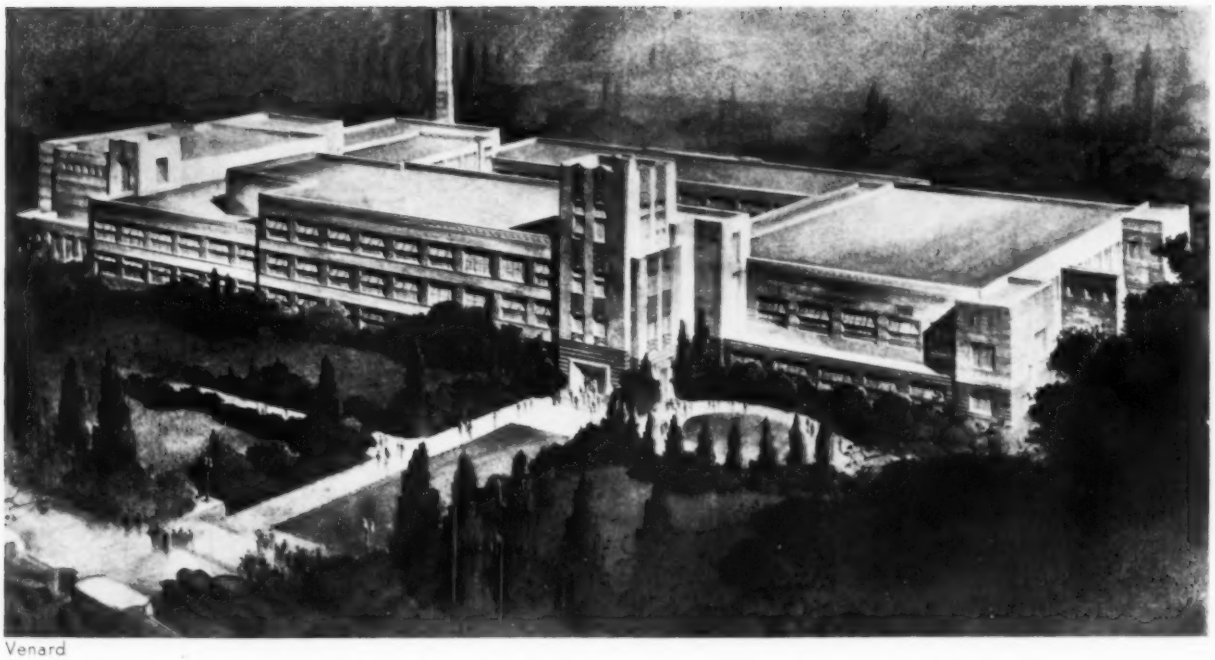
FIRST · FLOOR · PLAN

COLUMBIA GRADE SCHOOL
PEORIA, ILLINOIS
HEWITT, EMERSON & GREGG, ARCHITECTS



SECOND FLOOR PLAN

COLUMBIA GRADE SCHOOL
PEORIA, ILLINOIS
HEWITT, EMERSON & GREGG, ARCHITECTS



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THEODORE ROOSEVELT JUNIOR HIGH SCHOOL IN PEORIA, ILLINOIS
HEWITT, EMERSON AND GREGG, ARCHITECTS

WANTED–BETTER SCHOOL ARCHITECTURE

By HERBERT E. HEWITT

School buildings provide space areas required for instruction, circulation, recreation, storage and equipment.

THEREFORE—

School buildings should inclose space units in a direct and logical manner. There is no need for a monumental or columnar architecture. Such applied forms disguise the meaning of the building and its variety of uses.

A survey of the published photographs of school buildings built in this country in the past ten years or so leads one to the conclusion that architectural design has not kept pace with the improvements shown in planning and equipment. Also a great deal of taxpayers' money has been wasted on efforts to "decorate" fundamentally bad designs or to spoil good ones.

What can we architects say for an architecture that depends for its interest on buttresses that buttress nothing, columns that support nothing, pilasters and pediments that are "plastered-on" and have not the slightest relationship to the fundamental mass or structure? It is the exception to find buildings in which the exterior is a logical and unaffected expression of the practical requirements handled in such a way as to make the observer feel the presence of a pleasing unity.

The survey revealed a vast amount of ornament, a great deal of which was either not good in itself, or was improperly placed; and nearly all of which was an absolute waste of taxpayers' money.

The exterior design of a modern school building is essentially the inclosing of space units and equipment. These are so exact in their practical requirements as to leave little flexibility. In this fact we see the reason why school "architecture" has not kept pace with the design of buildings for other purposes.

Room sizes for specific uses are determined by administrative practice and state regulations. Width of corridors, window areas, approved direction of light in relation to seating, storage areas and exits are regulated by code and by "common practice." It is the architect's function to arrange these elements in a direct manner without the use of a fussy façade screen that is purely for "effect." It is the "required elements" that determine an orderly school architecture, namely, space that is best suited to purposes of instruction.

Fritz Sauer

TRADE SCHOOL, VIENNA

J. HOFBAUER AND W. BAUMGARTEN, ARCHITECTS

SCHOOLS

PLANNING FOR EFFICIENCY AND ECONOMY

BY ELLWOOD B. CASSEL

SCHOOLS—PLANNING FOR EFFICIENCY AND ECONOMY

By ELLWOOD B. CASSEL

The author of this article is Supervisor of School Buildings Division, Department of Public Instruction, Commonwealth of Pennsylvania.

A MODERN school building is no longer the simple building our grandparents knew. The day of the ungraded, one-room schoolhouse has passed. The first departure was a grouping of several classrooms under one roof, a change which made possible graded instruction. Now, with employment of special subject teachers and departmentalized organization—particularly in high schools although not only in the higher grades—fewer formal classrooms are needed for a given enrolment but more rooms, such as laboratories, libraries and shops, are required for special activities.

Coincident with the development of larger, complex school buildings has come a greater need for accurately predetermining the use to which various rooms will be put. In addition to caring for immediate needs, rooms should be arranged so that additions to the building may readily be made, if required by future enrolment increases.

In the larger school districts no school building should be considered as an independent structure. Instead, it should be classed merely as a unit of the complete school plant which serves the entire community. To make this possible, a comprehensive program for construction and reconstruction should be developed which will anticipate probable school needs of the district for a period of from ten to twenty years.

Such a program should be based on studies of probable enrolment trends, curriculum needs and adequacy of existing buildings. A financial analysis also is necessary so that budgets of succeeding years may be fairly distributed and the district be kept solvent.

Design of Instruction Rooms

The main purpose of a school building is to provide a place of instruction for children. Accommodations thus provided may also be used during otherwise idle hours for instruction or entertainment of adults. This secondary use should never interfere with the smooth functioning of the building's primary purpose.

Design then should be directed toward instruction rooms. Other necessary units of the building, such as corridors, stairways, toilet rooms, and offices, should be subordinated. Coupled with this is the requirement of safe and healthful accommodations.

Instruction rooms should be so designed that reception of sensory stimuli by pupils may be accomplished with as little effort as possible. Size, illumination, ventilation and equipment are the four important items to consider.

Classroom Size

The size of a classroom is determined by the number of pupils who will be assigned to a teacher. This number varies greatly and cannot be fixed even within a specific district because of fluctuations in enrolment and uneven distribution of pupils by grades. Educators endeavor to limit elementary-school classes to 40 pupils and high-school classes to 35 or less. As a result, standards have been developed for classrooms accommodating those numbers.

Theoretically, classrooms for smaller children would require less space than would be needed for those in higher grades. Practical considerations with regard to building construction and flexibility of school organization suggest a more nearly uniform size. Statutes, such as that in Pennsylvania which requires a minimum allotment of 200 cubic feet of air space for each pupil, may become the principal factor in determining the dimensions of a room.

A generally accepted standard size for an elementary-school classroom is 23 by 30 feet in area and 12 feet in height. These dimensions provide 200 cubic feet of space for 41 persons and the width, not in excess of twice the height, permits a comfortable spacing of six rows of the smaller-size desks. The ratio of width to height is important from an illumination standpoint and will be discussed later in detail. A room of such size is not so large that one cannot see or hear conveniently and normally from the most remote point. To overcome the likelihood of disturbing echoes within a room, transverse beams projecting below the ceiling level should be avoided.

Daylighting the Classroom

Proper illumination is one of the most effective means for conservation of vision among school children. Many factors have a direct bearing on illumination of rooms although laws in many States merely require a stipulated ratio of glass area in

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windows to floor area. One to five is the ratio required in new school buildings in Pennsylvania. States farther north should have greater glass area, whereas those to the south need less.

In considering the preliminary layout of rooms, orientation should first be determined. Practical limitations usually prevent an ideal exposure for every classroom. However, a minimum number of rooms should face north.

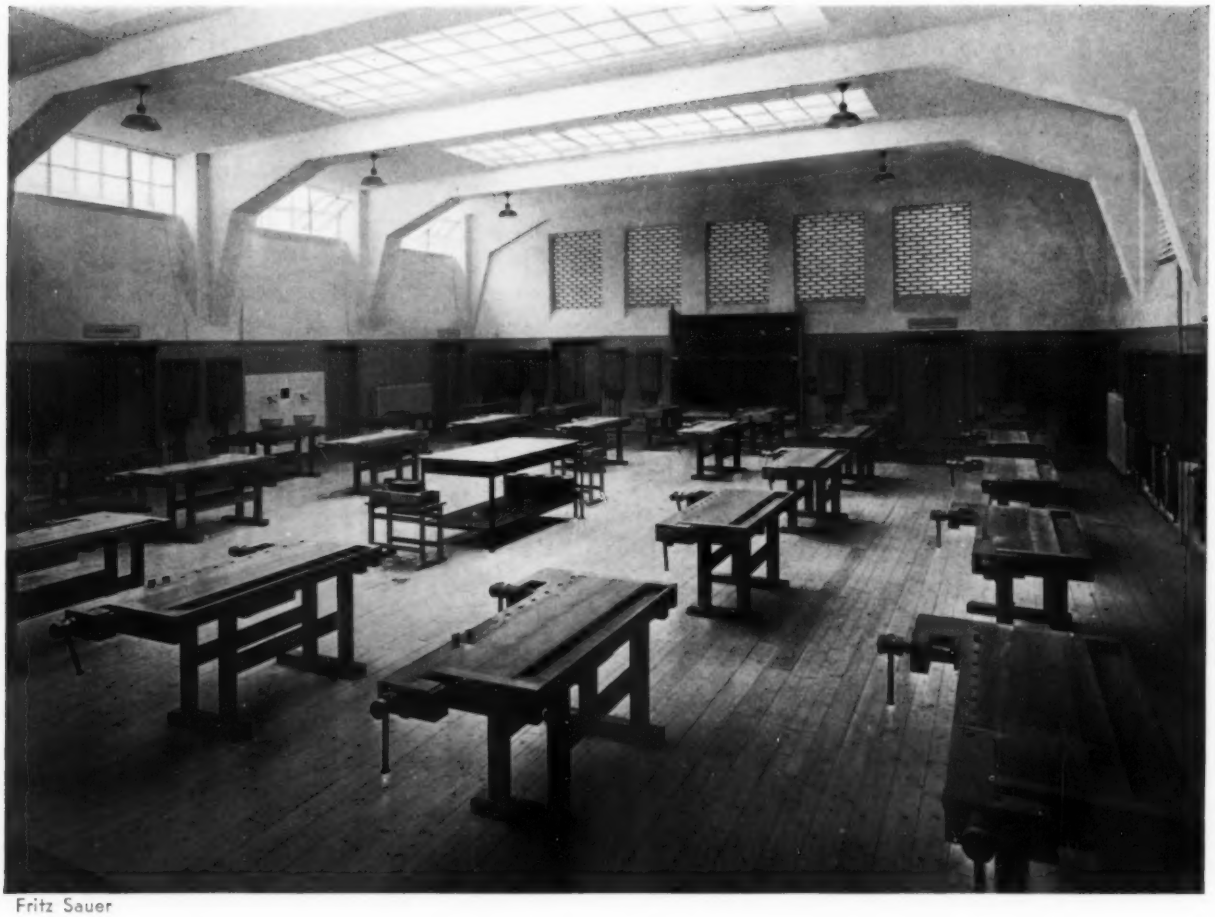
It is desirable that sunlight enter a classroom some time during the day but shades should be so arranged that the sun will not shine directly on pupils' desks. Double shades, which may be raised or lowered from a point near the meeting rail of the sash, provide the most satisfactory control. They should be of a translucent material and light in color so that while excluding direct rays of sunlight they will admit a diffused glow.

Trees, buildings or other obstructions should be sufficiently remote so that natural illumination will not be impaired. A good rule is to keep the top of any obstructing object below a diagonal line (with base equal to twice its height) projected from the sill of a classroom window. This is the same angle of light which was mentioned in a preceding paragraph with regard to width of room, and approximately parallels a line drawn from the top of a classroom window to the top of the inner row of desks.

Windows should be placed as near the ceiling as construction details will permit and the lower glass line should be not less than 40 inches from floor level. The purpose of having windows near the ceiling is primarily to benefit the inner rows of seats. The recommended distance between floor level and lower glass line is to exclude light source from below eye level. It is desirable to group windows along one side of a room only. Wide piers between windows should be avoided so that sharp contrasts of light and shadow along the outside wall may not exist. However, a blank wall space between the windows and front wall of a classroom is desirable so that glare from reflected light on the blackboard may be reduced.

Advantages of placing windows on one side of a room over providing bilateral lighting are threefold: (1) children are not subjected to confusing cross-shadows on desks; (2) teachers are not handicapped by having to face a bright window when addressing a class; and (3) buildings are not limited to four classrooms to a story. It is evident, therefore, that improvements in illumination and in school organization have progressed hand in hand.

To assure a minimum of 5 foot-candles (10 are



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recommended) on desk tops, window lighting should be supplemented by a properly-designed system of electric illumination. Sufficient outlets should be installed to obtain even distribution of light. Too few outlets require light sources of objectionable intensity.

To make effective the light which is provided, wall surfaces should have a satisfactory light-reflecting factor. Gloss finish on walls or furniture should be avoided. Ceilings should be very light in color for reflection value and to avoid contrast with the illumination source. Walls may be a slightly darker tint to eliminate too great a contrast with blackboard surfaces. Tacking boards of a neutral color in place of some blackboards reduce the amount of light absorption in classrooms and allow teachers to exhibit visual instruction material properly. The lower 3 feet of a classroom wall may be painted a darker color in order that unavoidable soiling may not be too apparent.

Classroom Ventilation

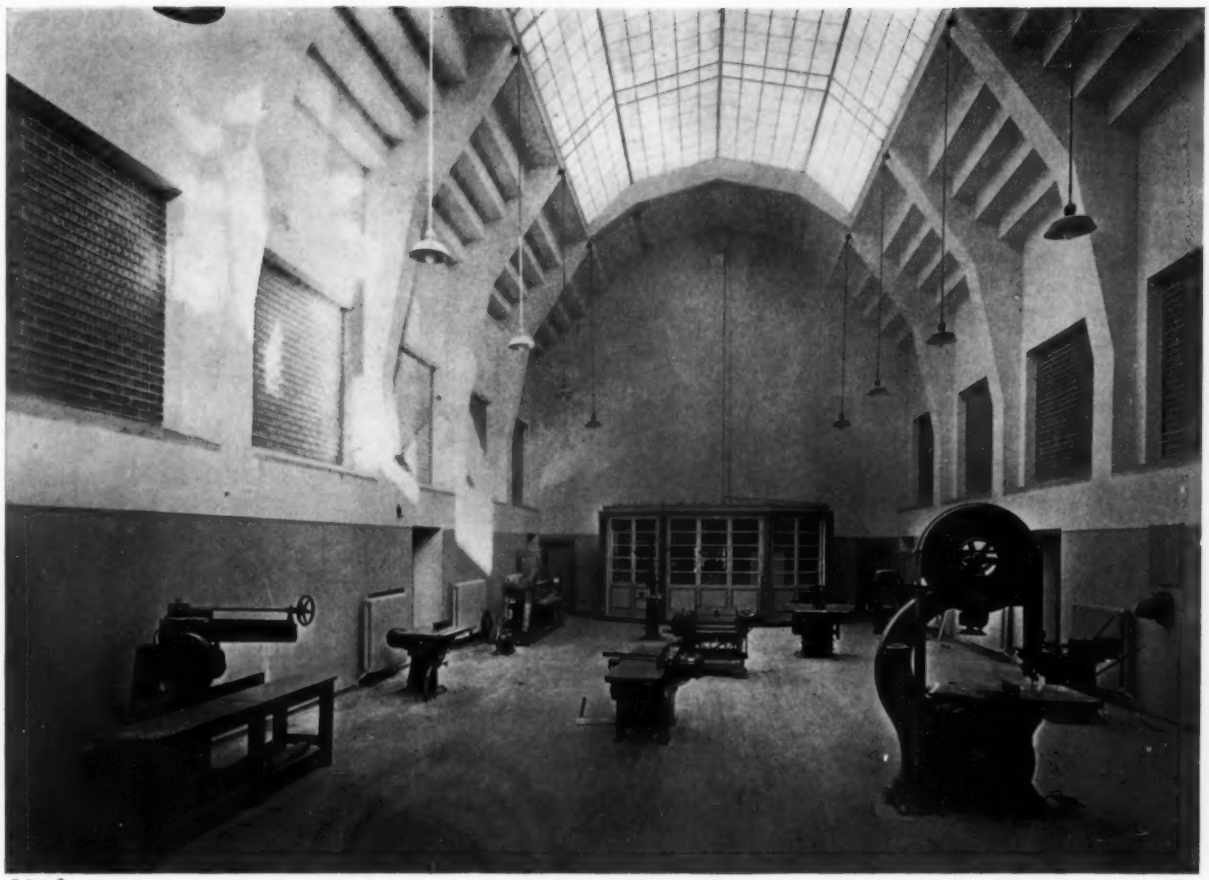
The question of ventilation is one which has not been definitely answered. Many States have statutes requiring a certain amount of fresh air supply for each pupil. Studies are being conducted to determine what changes in laws should be made in interests of health and economy. Because of cost of installation and operation of mechanical equipment and also because of inefficient operation by untrained janitors, questions have been raised whether results obtained justify financial outlay. If child health can be protected by mechanical ventilation, then any necessary expense is justified.

Hygienists and physicians must determine the amount of fresh air required to maintain healthful surroundings. When this amount is determined, engineers can design equipment to supply it. For the present it is necessary for the architect to abide by whatever regulation may be effective in the State where the school building is to be erected.

Equipment

The architect should be thoroughly familiar with the type of equipment and furniture which will be placed in the building. This knowledge sometimes makes it possible, by minor adjustments in location of openings or partitions, to avoid later inconveniences. For fixed equipment requiring service connections, the need for this information is obvious.

A bookcase and supply closet are valuable adjuncts to any classroom. If a double partition is built opposite the windows, the space between can be used to inclose either classroom wardrobes or



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recessed corridor lockers. The front wall should have a blackboard 36 inches to 42 inches in width extending its full length. Above should be a tacking strip and hangers for maps. Light-colored curtains hung so that they may cover blackboards when not in use make lighting of classrooms more effective.

Classroom doors should swing outward. If the opening is through a double partition, the alcove should be on the corridor side. Wherever possible, the opening should be placed so that the door knob is approximately opposite the front row of desks and the hinge nearer the front of the classroom. The attention of the teacher but not the pupils is thus drawn toward the person opening the door. If the door is glazed to admit light to corridors, muntins should be employed to divide the glass area into small lights. All but possibly one light should be of opaque glass so that persons passing in the corridors will not distract pupils' attention.

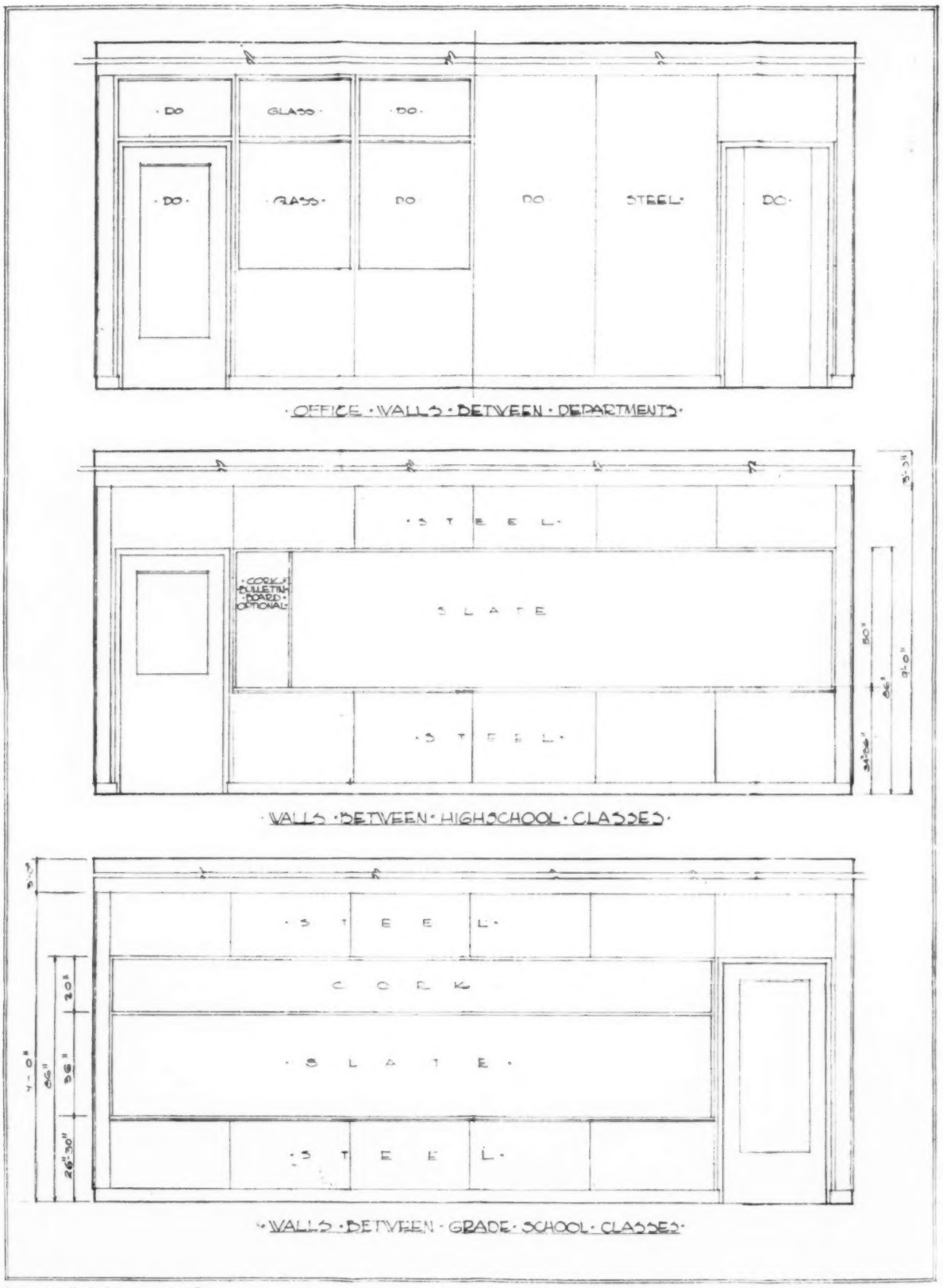
Regulations in a few States require two doorways from each classroom. In view of the small likelihood of a fire gaining rapid headway during school hours, this precaution seems unneeded. A teacher certainly has better control of movement to and from classes where only one door is provided.

The question of built-in equipment for special subject rooms is one which deserves more attention than has been given in the past. No longer can we afford to add several feet to the length of a room (and correspondingly cubage to a building) to take care of an inefficient and uneconomical assignment of space. Already some progress has been made in development of smaller-size laboratory equipment than had formerly been considered standard. When, by use of built-in cupboards and combinations of wall and free-standing equipment we can satisfactorily accommodate a full-size laboratory class in a standard-size room, we shall have reached another goal in school building design.

A music room in a recently completed school building illustrates how fixtures may be designed to accommodate articles in special subject rooms so that the room may be free for other uses. Cabinets with drawers and closets of varied sizes designed to accommodate music and different instruments line the walls. Space which otherwise might have been wasted was converted into a closet and cedar-lined for storage of uniforms used by the band.

Design of Gymnasiums

With the development of a physical education program, gymnasiums have become increasingly important in school buildings. It is only when enrol-



Courtesy E. F. Hauserman Co.

Flush-face soundproof partitions of steel with glass and slate. These partitions may be readily moved so as to adjust room sizes to new needs.

ment equals 1000 or more pupils that the most efficient and economical accommodations can be provided. This is based on a program of two periods of a total of thirty assigned to physical education. Under these circumstances full-time use may be made of two gymnasiums—one by girls and one by boys. Each gymnasium should have a minimum of 41 feet by 66 feet in floor space so that a standard-size basketball court with a 3-foot wide out-of-bounds may be provided. A minimum height of 18 feet in the clear is recommended. If the height must be less, a ceiling free from beam projections reduces the objections.

If the two gymnasiums are separated by a folding partition, an exhibition basketball court can be arranged at right angles to the other two courts and temporary seats for spectators can be erected around it. Gymnasium seating is used too infrequently to justify assignment of space for permanent seats.

Convenient storage rooms, adequate in size, should be provided for the seats when knocked down and for gymnasium apparatus. Use of the latter, however, is decreasing as greater emphasis is being given to games and exercises not requiring bulky apparatus. A small office for each physical instructor should be provided.

Two gymnasiums not only simplify scheduling of coeducational classes but make possible full-time rather than half-time use of shower and locker facilities. Locker rooms adjoining separate gang shower rooms are accepted as a standard arrangement for boys. Although gang showers have also been provided for girls in some junior high schools, a majority of educators advocate private dressing and shower stalls. A combination of two dressing stalls with a shower stall between, used alternately by two girls, offers about as economical and satisfactory an arrangement of this kind that has as yet been devised. To minimize danger of scalding, a master temperature mixing valve should be under the direct control of the physical instructor. In those gang shower rooms where the "run-through" shower is used it is advisable to install one or two locally-controlled shower heads for individual use to avoid waste. Shower heads for girls' use should be limited to shoulder height.

A number of methods have been employed for storage of gym clothing. One of the most satisfactory so far developed consists of lockers in three tiers, each approximately 24 inches high, 7 inches wide and 15 inches deep. One locker should be assigned for each pupil enrolled in the school. A sufficient number of larger lockers to hold other clothing should be provided to take care of the largest class.

Greater variations occur in the design of auditoriums than in any other unit of a school building. It is here that the greatest splurge is sometimes made by districts that can or cannot afford it. Sometimes the auditorium is made far in excess of the size required by the school organization in order to accommodate community gatherings. On the other hand some districts effect economies by planning auditoriums so that they may be adapted to other uses. The most common adaptations are combination stage-gymnasiums or auditorium-gymnasiums. These combinations have their disadvantages but are necessary expedients in those districts where enrolment and financial resources are limited.

A motion picture booth should be provided. Likewise means for shutting out daylight. It is well to have the music room not too remote from the stage so that band and orchestra instruments may be stored conveniently. Acoustical treatment of wall surfaces should be considered in design of auditoriums. Sound treatment is desirable also in corridors and other rooms of a school building.

Cafeteria

Except in densely populated cities, larger school organizations draw pupils from homes too far distant for them to return for their noonday meal. The need for a cafeteria therefore becomes increasingly important. Perhaps the only special requirement for a cafeteria serving pupils of lower grades is to have the counter on the children's side at a reasonable height. A raised floor at the front of the counter will serve the purpose. Drinking fountains should be provided in cafeterias, gymnasiums and at convenient locations in corridors. They also should be set at heights convenient for use by the children.

Toilet Facilities

A multiple classroom school building makes it possible to provide toilet rooms for boys and for girls economically on each administrative floor. Basement toilet rooms are not much less objectionable than outside privies, and should be avoided in plans for new school buildings.

State regulations governing the required number of toilet fixtures are by no means uniform. The standard in Pennsylvania is to provide in girls' toilet rooms one closet bowl for each classroom. Half the number of closet bowls are provided for boys and three urinals substituted for each two closet bowls thus omitted. If a school building exceeds six classrooms, a 20 per cent reduction in number of fixtures is recommended.

The so-called juvenile height closet bowls are strongly recommended for elementary schools and are of almost equal physiological value in high schools. In junior and senior high schools, an installation of one larger booth in each girls' toilet room which is fitted with a lavatory and closet bowl has met with great favor. Lavatories equipped with soap and towel dispensers should be placed near the exit of every toilet room.

Screening of toilet rooms should be arranged by a winding entrance rather than by an inner swinging door. Less confusion, less danger of accidents and sure screening are the advantages. A reasonable amount of privacy within the rooms should be

provided by means of booths inclosing fixtures. Some school superintendents favor omitting doors from booths in boys' toilet rooms only, while others as strongly insist on providing them for both sexes. A door 36 inches in height hung 15 to 18 inches clear of the floor is ample. In-swinging doors hung on gravity hinges set to remain open when the booth is not in use have many advantages over out-swinging doors.

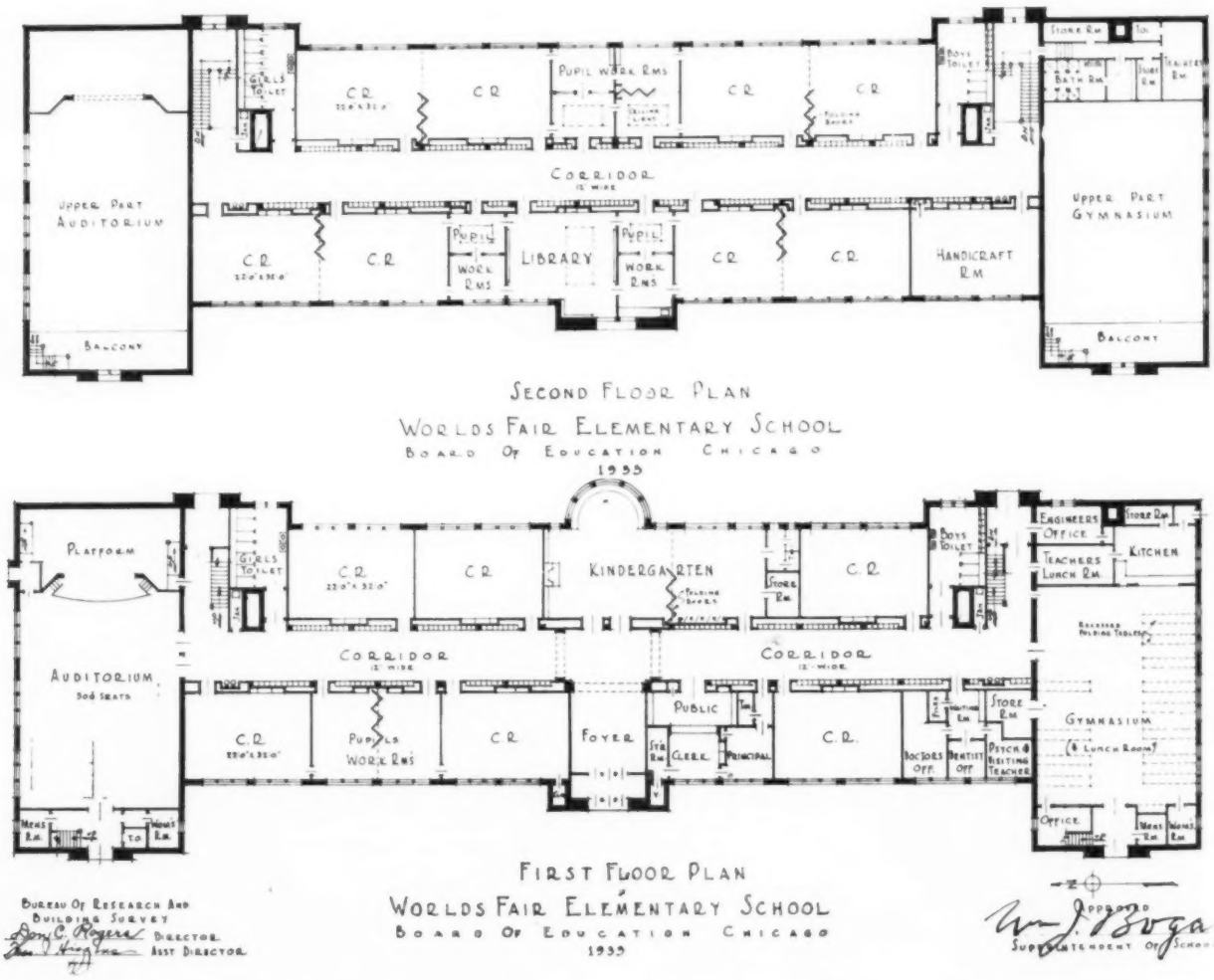
Variable Requirements

Offices and other administrative quarters must be designed for individual local requirements. Often one building will serve as headquarters for an entire district and consequently office space must be larger than would be needed to administer that particular school unit only. The architect will find that the superintendent or board members usually have definite ideas concerning these requirements.

In spite of the fact that many rules and regulations governing details of schoolhouse construction have been promulgated, it is impossible to reduce the design of a school to a formula. Although there may be agreement regarding dimensions of elements entering into the building, standardization of the assembled structure is impossible.

This is true for several reasons. Contour of site, environment, climate and available materials affect school design as well as that of any other structure. Type of curriculum offered and proportionate enrolment in different courses vary by communities. This naturally affects relative space assignment for special subject rooms. In smaller schools rooms cannot be designed for special subjects only—they must be planned for multiple uses.

Developments and changes have been brought about gradually but nevertheless they have been great. Comparison of a modern school building with one built twenty or more years ago leaves no room for doubt on that point. There is opportunity for further progress in school building design. Whatever developments are made will result largely from architects' resourcefulness.



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SPECIFY FOR QUALITY

By GUILBERT AND BETELLE, Architects

Price and quality are inseparable. Under present economic conditions quality is being sacrificed for price. An architect commissioned to construct a quality building should plan the administrative portions of his duties so that it will be, as far as practicable, to the advantage of all identified with the construction of the building to furnish quality under reasonably competitive conditions.

Under the present method of awarding contracts for a single amount, the owner, the architect and the producer of quality products find themselves in direct conflict with the general contractor and his subcontractors, who are forced to give little, if any, consideration to quality.

We have been giving this problem considerable thought in connection with public work, where we believe price competition is at its worst. The following is based on our experience with obtaining quality in public work.

The courts have taken the stand that it is possible to purchase ability, equipment and experience. Therefore, the bidder need not possess them at the time of the awarding of the contract, the award being made on the basis of prices and financial responsibility. If a bidder can purchase ability, equipment and experience, there is no logical reason why these cannot be specified and legally required. For this and other reasons, the architect can, through the medium of his specifications, require the bidder to furnish materials, labor, subcontractors, and administrative organization, which in his judgment are sufficient to produce the kind and quality of a building required by the owner.

When these conditions are properly specified to meet logically the requirements of a particular job, the architect will find that he has clothed himself automatically with sufficient authority to demand the quality the owner purchased and the contractor agreed to furnish. The courts will generally recognize these contract requirements, and if they are enforced honestly with ability and without prejudice, the courts will back up the architect's judgment. They have in effect taken the view that the owner and the contractor have agreed to construct a project according to the judgment, not of the court and not of the jury, but of the architect, and unless he is disqualified by dishonest procedure or lack of ability, his judgment is generally recognized by the courts as final.

The solution of a given problem will vary with the type and class of owner and architect, the quality of the work decided upon, the method of bidding, and the class of general contractors, subcontractors, and producers, who would naturally do the class of work required. There is no stock solution for all problems; each presents different methods of procedure, perhaps in details, and in some cases an entirely different set-up would be used. What would be an ideal solution for one would probably not solve the other.

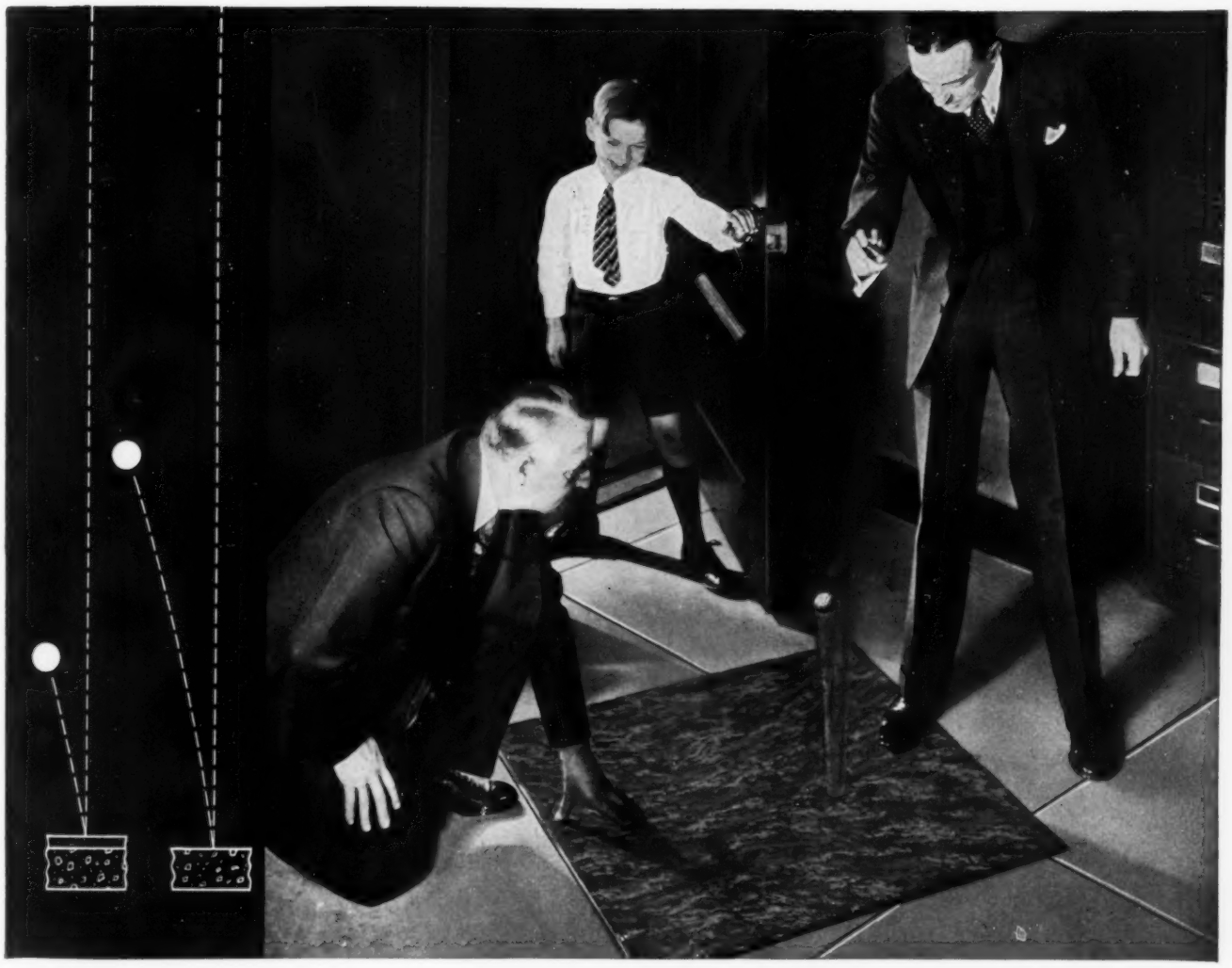
The first problem is to decide the class of organization desired to construct the particular building and then by means of the "General Conditions" to specify that type of an organization. For instance, if the organization you have in mind has two timekeepers on the job, specify two timekeepers. If it carries public liability and automobile insurance to protect the owner, specify it. If it furnishes its subcontractors with power, scaffolding, or other things, free of cost, specify them so that you will naturally attract this type of general contractor, and if his competitor does not organize his work the same as he does, force him to do so, and you will find that the poor man will estimate pretty close to the figure of the good man.

Second, make contacts with reliable producers of the highest standing who manufacture products which you believe are correct for your building. In consultation with these producers, select the type and class of material desired for the particular project. Specify them, and then obtain assurances from the producers that they will under no circumstances sell material other than that specified. Reserve the right, by means of the "General Conditions," to approve all subcontractors. Through the credit and sales organizations of the producers, a credit and trade rating can be obtained of the particular subcontractor proposed.

In fact, the reports from these organizations are generally so complete and so detailed that an architect has little, if any, trouble in approving or disapproving a subcontractor. When a hundred per cent of the materials are directly controlled in this manner, and eighty per cent of the labor and subcontractors are similarly controlled, there is little that the general contractor could do which would affect the quality of the building.

This method of procedure protects the legitimate producer, as he is anxious to find outlets for his quality product. It protects the legitimate subcontractor, as he realizes that his competitor will be required to furnish the same type and class of material as he is to furnish. It protects the legitimate general contractor because he knows that his competitor will be required to have the same class of overhead, furnish the same kind of insurance bonds, watchmen, and office routine, as he will, and will also be required to furnish the same type and class of subcontractors. The architect's supervision is cut considerably, and finally, but not the least, the owner is assured that he is obtaining exactly what he has paid for.

C. E. KRAHMER,
Specification Writer.



The Principal didn't look very dignified . . *but he had a reason*

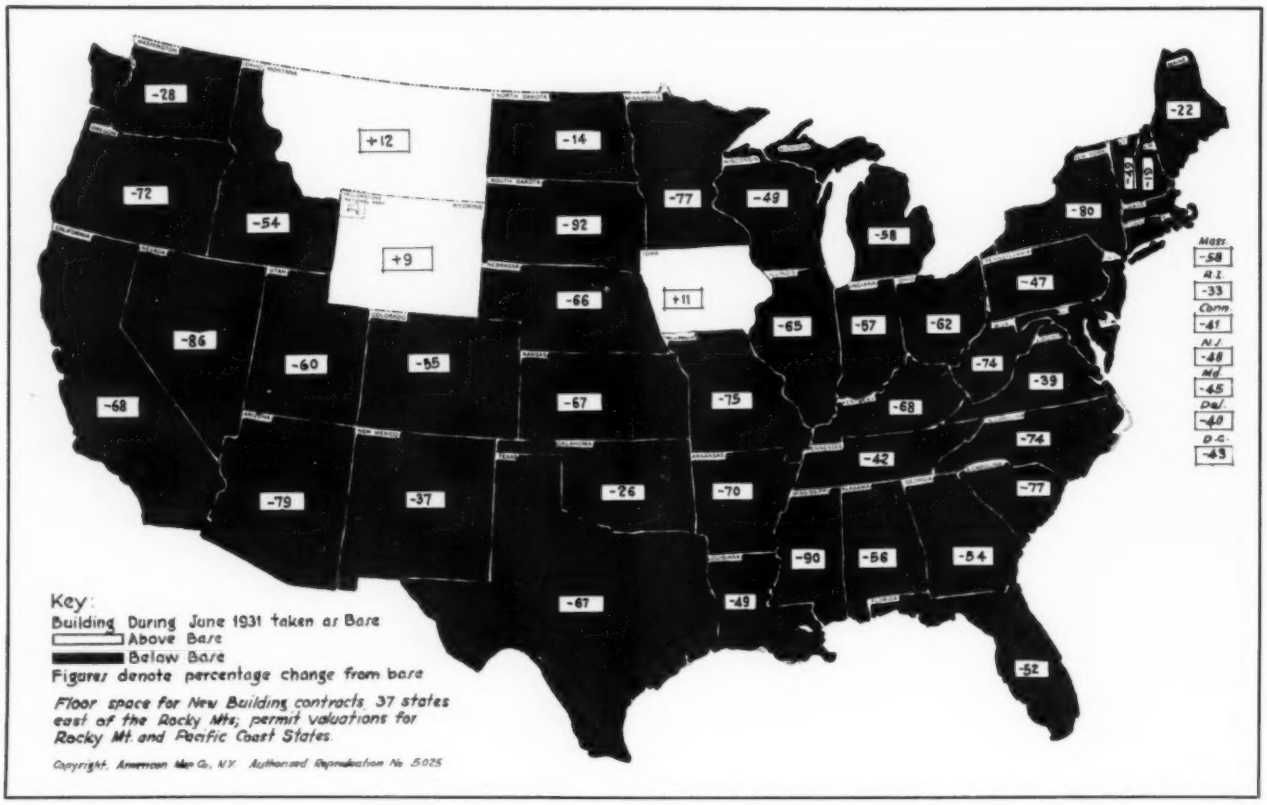
He was watching a golf ball . . . watching it measure the comparative resiliency of two floors widely used in schools. Simple as this test may be, it is none the less convincing. On hard floors (wood or concrete) the ball bounces high. On a resilient floor of Sealex Linoleum, the ball bounces low. The diagram above shows the approximate difference.

This matter of resiliency is important. The low bounce on Sealex Linoleum means that a good part of the shock of impact has been absorbed by the floor. Hard-working teachers—many of whom are in the habit of standing up while they conduct classes—will be less fatigued at the end of a day spent on Sealex Linoleum Floors. Also—more resiliency means less noise. Sealex Floors help students concentrate on their studies.

Write our School Floors Department for further information. Ask particularly about the new Veltone effects in Sealex Floors. Veltones combine cheerful color with good taste—durability with economy. Get the facts about our Bonded Floors expert installation service—in which Sealex materials are backed by Guaranty Bonds.

CONGOLEUM-NAIRN INC., KEARNY, N. J.

SEALEX
LINOLEUM FLOORS



BUILDING TRENDS AND OUTLOOK

By L. SETH SCHNITMAN

CONSTRUCTION contracts awarded in the 37 States east of the Rocky Mountains during the period from July 1 to July 15, inclusive, totaled $70,505,000. This total compares with $57,813,100 for the first half of June and $137,278,800 for the corresponding half-month of July, 1931. Of the current July total $26,481,700 was for nonresidential building, $10,077,500 for residential building, and $33,945,800 for public works and utilities.

During June contract awards in the 37 States totaled $113,075,000 as compared with $146,221,200 in May and $316,147,600 in June, 1931.

The contract total for the 37 States as a whole during the third quarter of 1932 will probably approximate $300,000,000. Residential contracts to be placed during the period will probably range between 60 and 65 million dollars; nonresidential building awards will probably range between 125 and 135 milion dollars; while public works and utilities awards will likely range between 100 and 115 million dollars, though it is possible that in this category considerable impetus to new undertakings may come as a result of the operation of relief measures recently passed by Congress.

The present low ebb of residential building seems to indicate that current activity in this field is virtually at the irreducible minimum though it is likely that there may be a period of waiting before definitely turning upward.

MATERIAL PRICE MEASURING ROD*

The prices in this tabulation enable one to visualize at a glance the main trend of the material market.

Their significance does not extend beyond that point, and the explanation under them should be read carefully.

F. W. Dodge Corporation Composite Prices as Indicated in Explanation—

Material	This Month	Month Ago	Year Ago
Portland Cement	$2.00	$2.00	$2.05
Common Brick	11.85	11.90	12.46
Structural Steel	1.60	1.60	1.65
Lumber	15.67	15.77	17.16

Prices given in this comparison are composite and do not in all cases refer to one item. For instance, the price of structural steel is the composite of prices of shapes and plates f.o.b. Pittsburgh; the price of lumber is a composite of five items of Southern pine and five items of Douglas fir f.o.b. mill; the price of cement is a composite of prices in fourteen different cities per barrel, carload lots, to contractors; price of brick is composite in fourteen cities per M, delivered on the job.

*As previously published in *General Building Contractor.*

– in buildings

soil, waste, vent lines and rain leaders need effective protection from atmospheric corrosion

Look For The Green Color!

NATIONAL COPPER-STEEL PIPE is marked as follows: BLACK PIPE—Smaller sizes colored green. Larger sizes, two green stripes running lengthwise. GALVANIZED PIPE—All sizes, two green stripes running lengthwise.

STEEL Pipe with a copper content has its most marked and best recognized value where alternate wet and dry exposure must be endured. Under such exposure, its protective influence is known to be considerable even though the percentage of copper used be very small. Wherever long life is desired of pipe lines in large buildings, and "atmospheric corrosion", so called, is the determining factor, NATIONAL Copper-Steel Pipe is recommended as more economical than ordinary steel. The extra cost is too little to be a barrier—the added years of service more than compensate. For full information, read Bulletin 11 on NATIONAL Copper-Steel Pipe—

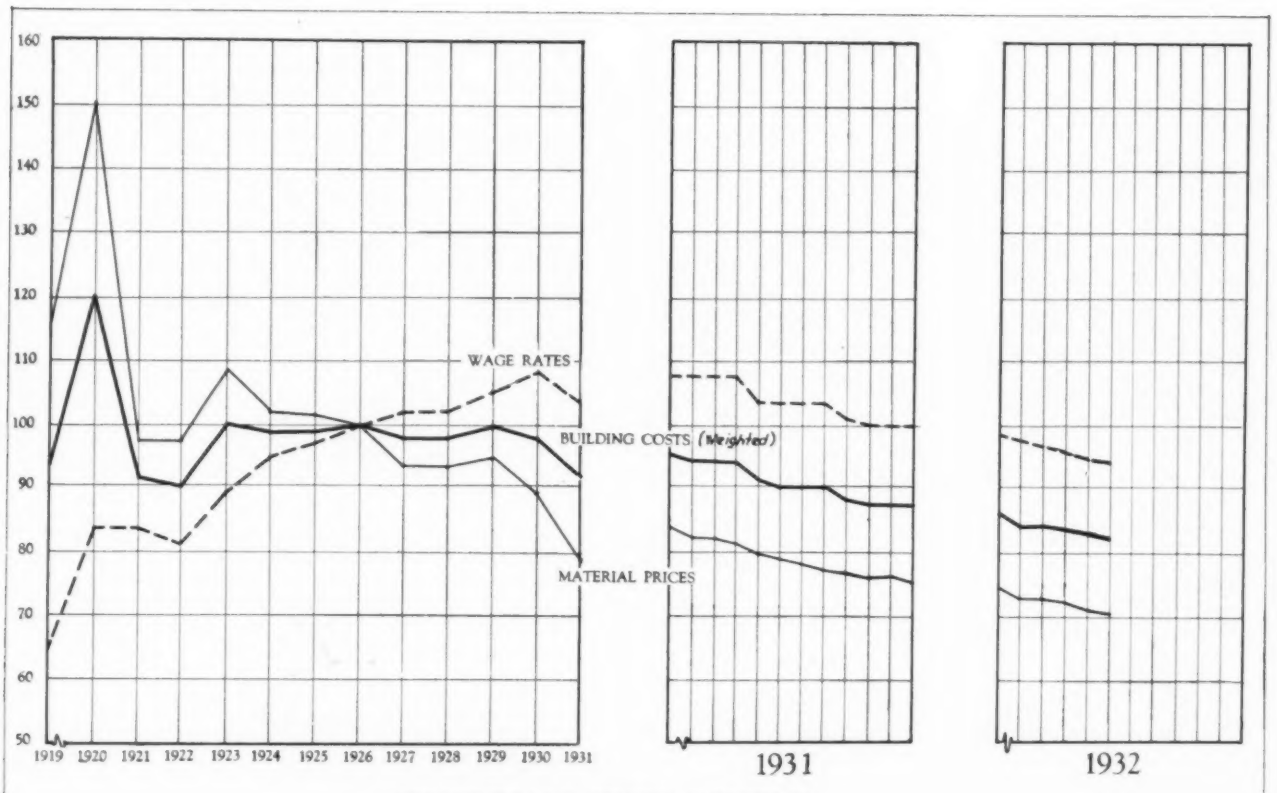
The Original Copper-Steel Pipe

NATIONAL TUBE COMPANY, PITTSBURGH, PA.
Subsidiary of United States Steel Corporation

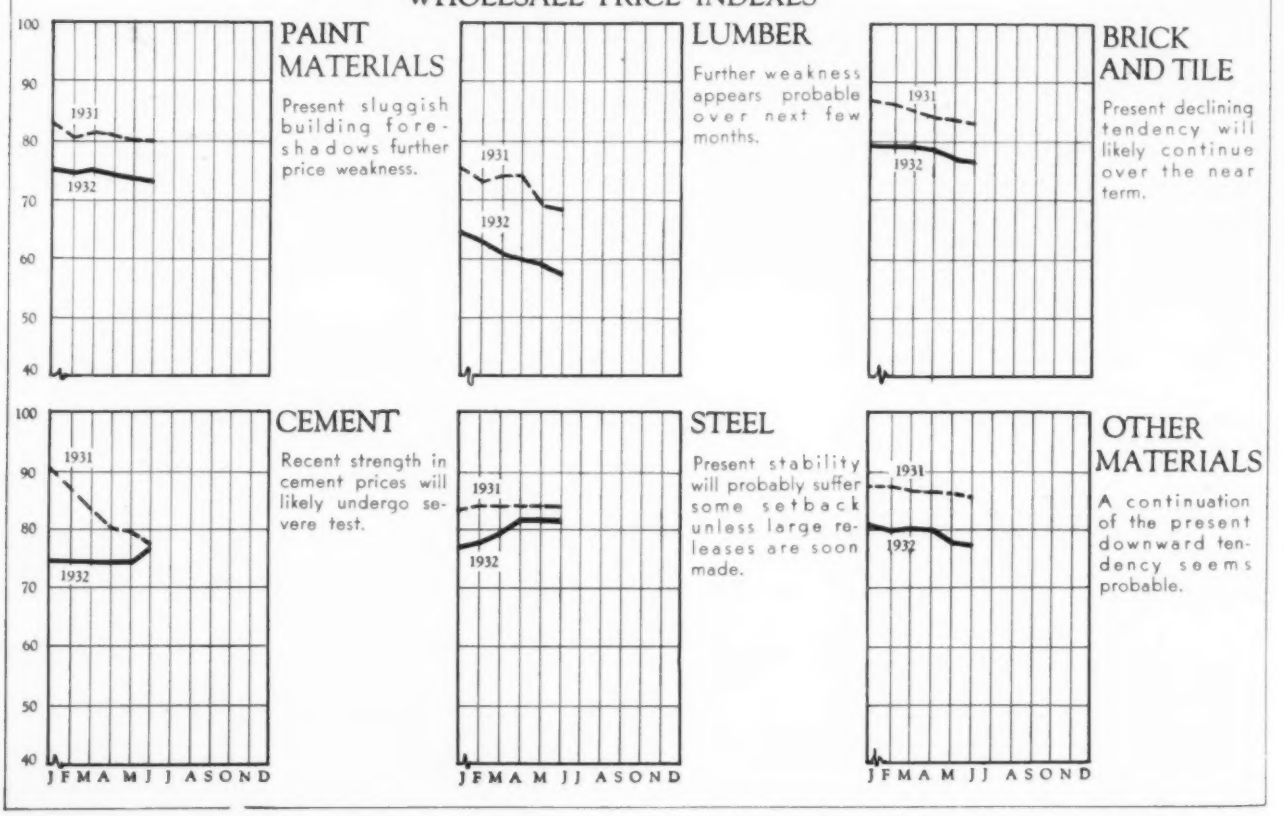
NATIONAL COPPER-STEEL PIPE

MATERIAL PRICES, BUILDING WAGE RATES AND BUILDING COSTS COMPARED

1926 Monthly Average — 100



WHOLESALE PRICE INDEXES



PAINT MATERIALS

Present sluggish building foreshadows further price weakness.

LUMBER

Further weakness appears probable over next few months.

BRICK AND TILE

Present declining tendency will likely continue over the near term.

CEMENT

Recent strength in cement prices will likely undergo severe test.

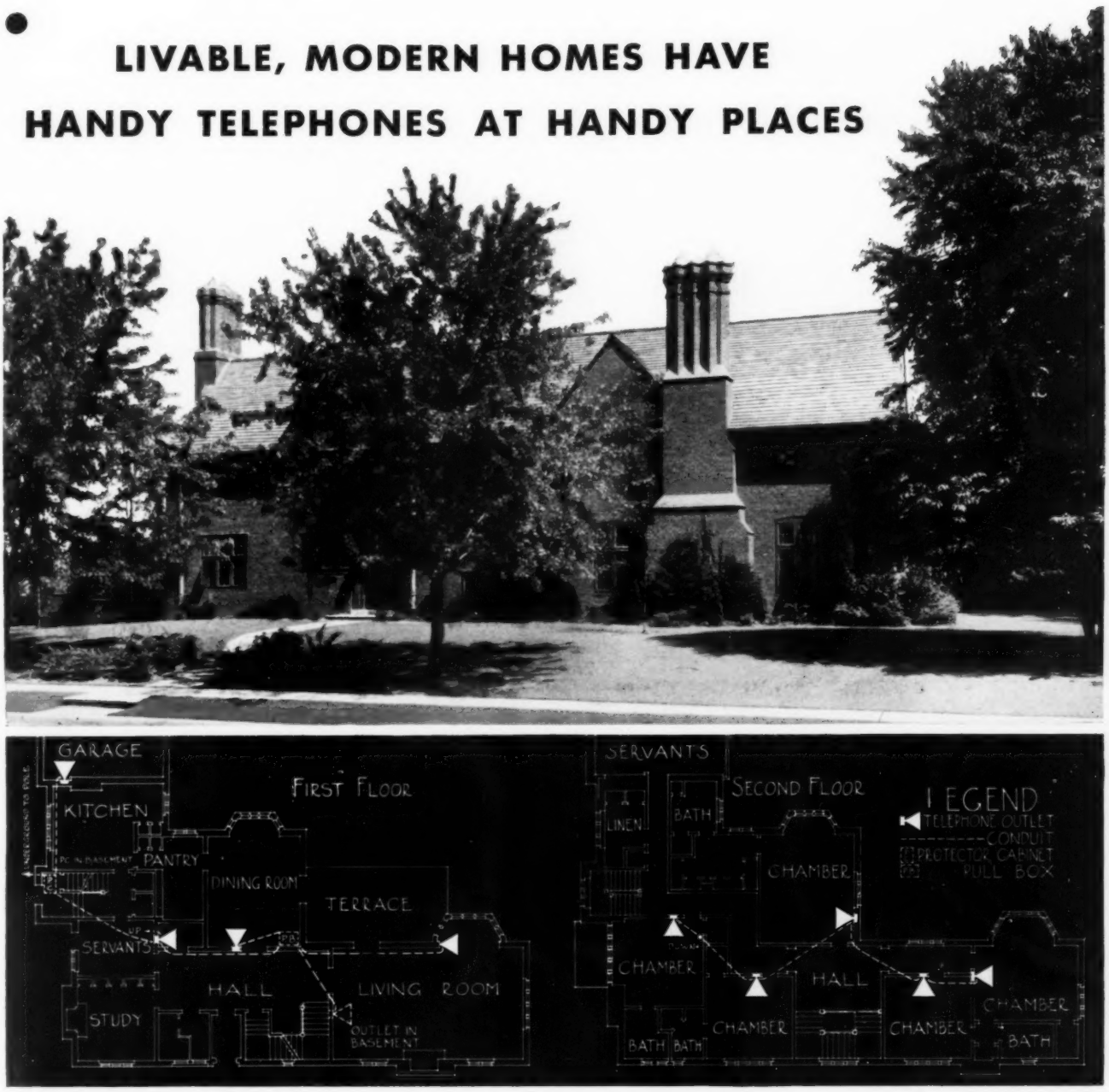
STEEL

Present stability will probably suffer some setback unless large releases are soon made.

OTHER MATERIALS

A continuation of the present downward tendency seems probable.

LIVABLE, MODERN HOMES HAVE HANDY TELEPHONES AT HANDY PLACES



In the residence of Mr. T. H. Hinchman, 92 Vendome Road, Village of Grosse Pointe Farms, Detroit, Michigan, telephone convenience is provided for by built-in conduit connecting ten telephone outlets, including one in the basement game room. SMITH, HINCHMAN & GRYLLS, Architects, *Detroit.*

COMFORT and efficiency are two prime requisites of up-to-date homes. Telephone convenience contributes generously to both. Telephones at strategic points in important rooms save steps and minutes, simplify household management.

Architects who want to assure adequate telephone arrangements, plan carefully in advance, specify conduit for telephone wires in walls and floors. Then outlets can be located exactly where they're wanted, to meet individual needs. All wiring is concealed and there is greater freedom from service interruptions.

Trained representatives of the local telephone company will gladly help you choose the type of telephone equipment and installation best adapted to your projects. There is no charge. Call the Business Office and ask for "Architects' and Builders' Service."

WAGE SCALES IN THE BUILDING TRADES

Information Furnished by National Association of Builders Exchanges and Compiled by Division of Statistics and Research, F. W. Dodge Corporation, as of July 15, 1932

	Asbestos Workers	Bricklayers	Bricklayers' Tenders	Carpenters	Cement Finishers	Electricians	Hoisting Engineers	Iron Workers—Ornamental	Iron Workers—Structural	Laborers	Lathers	Painters	Plasterers	Plasterers' Tenders	Plumbers	Roofers—Composition	Roofers—Slate & Tile	Sheet Metal Workers	Steamfitters	Stone Masons	Tile Setters	Tile Setters' Helpers
Akron	$1.37½	$1.45	$0.45	$0.95	$0.90	$0.90	$0.70	$1.00	$1.15	$0.45	*$1.37½	$0.90	*$1.62½	$0.80	$1.00	$0.95	$0.95	$0.95	$1.00	*$1.45	*$1.25	*$0.50
Atlanta	1.00	1.25 1.40	1.30 .45	.70	1.25	.90 1.10	.60 1.00	35 1.85	1.25	.25 .35	1.00 1.25	.75	1.25	.30 .45	1.25	.80	.80	.90 1.00	1.25	1.00 1.25	1.25	.40
Baltimore	1.12½	*1.25	1.00	*1.00	*1.25	*1.43¾	*1.25	*1.65	*1.65	.35 .40	*1.50	*.90	*1.25	1.00	*1.00	1.00	1.00	*1.37½	*1.25	1.25	1.25	.72
Boston	1.25	*1.30	.70	*1.17½	1.17½	*1.50	1.17½	1.17½	1.17½	.70	*1.50	1.12½	*1.37½	*.95	*1.25	*1.17½	*1.37½	1.17½	*1.25	*1.30	*1.50	*.95
Buffalo	1.50	*1.25	.50 .60	*1.60	1.12½	*1.30	$49.50 to $55.00 wk.	1.25	*1.25	.50 .60	1.37½	*1.00	1.62½		1.25	.85	1.10	1.10	*1.25	*1.25	*1.43¾	
Chicago	1.37½	*1.37½		*1.31¼	1.31¼	1.25 1.50	1.31¼	1.31¼	1.35	.82½	*1.37½	*1.41	*1.37½	.88¾	1.37½	1.37½	1.40	1.37½	1.37½	1.37¼	1.37½	.96¼
Cincinnati*	1.15	1.37½	.70	1.02½ to 1.20	1.02½	1.25	.80-1.10-1.25	1.25	1.25	.45	1.31¼	1.10	1.37½	.70	1.25	.92½	1.07½	1.07½	1.25		1.25	
Cleveland*	1.17½	1.37½	.72	1.12½	1.12½	1.05 1.25	1.12½	1.25	1.25	.72	1.37½	1.12½	1.37½	.72	1.25	1.15	1.37½	1.12½	1.25	1.37½	1.25	.81¼
Columbus	1.25	1.30	.90	1.00	.85 1.25	1.00	.60 1.25	1.25	1.25	.50	1.37½	1.00	1.00	.40 .50	1.00	.70 .80	.80 1.00	1.00	1.00	1.30	1.37½	.45
Dallas††	10.50	10.00	.50	8.00	10.00	*11.00	10.00	10.00	10.00	.35	10.00	*9.00	*10.00	*.50	12.00	8.00	9.00	*10.00	12.00	10.00	*12.00	†*.75
Dayton*	1.25	1.30	.80	1.00	1.15	1.55	1.25	1.35	1.35	.35	1.10	1.00	1.25	.80	1.15½	.85	1.00	1.00	1.15½	1.30	1.50	.60
Denver††	9.00	12.00 *13.00	6.50 7.00	10.00	10.00 11.00	10.00 11.00	10.00	10.00 11.00	10.00 11.00	4.00 5.00	11.00	*10.00	12.00	7.00	11.00	7.00 8.00	7.00 8.00	9.00	9.50	12.00 13.00	10.50	†.62½
Des Moines	1.00	1.25	.65	1.00	1.00	1.00	1.00	1.00	1.00	.55	1.00	1.00	1.25	.75	1.25	1.12½	1.12½	1.12½	1.25	1.50	1.25	.67½
Detroit	1.37½	1.25 max.	.55 .60	.80 1.00	.70 .90	1.25 1.40	.60 1.00	1.00 1.20	1.00 1.25	.50 .55	1.37½	.80 1.00	1.00 1.25	.70 .80	1.00 1.50	.70 .90	.80 1.00	.80 1.00	1.25 1.50	1.25 1.50	1.00 1.25	.80
Duluth	.85	1.10	.35 .45	.75 .85	.75 85	.90	.80	.80	.90	.35 .45	.85	.80	1.10	.70	.95	.70	.70	.80	.95	.75 1.10	1.25	.80
Erie	.80 .90	1.31¼	.50 .60	.75 1.00	1.00	1.00 *1.15	1.12½	.60 .90	1.10 1.12½	.35	1.12½	.75 .90	1.31¼	.50 .60	1.18¾	.60 .70	1.00	1.00	*1.18¾	1.31¼	1.00	.50 .60
Grand Rapids	.65 .80	1.25	.40	.60	.65	.90	.75	.80	1.00	.35	.80	.60	.80	.40	.90	.50	.70	.70	.90	1.25	1.25	.50
Houston	NO FIGURES AVAILABLE																					
Indianapolis	1.32½	1.62½	.90	1.22½	1.17½	1.50	1.37½	1.45	1.45	.40 .45	1.57½	1.25	1.57½	1.00	1.00	.60 .90	1.27½	1.22½	1.50	1.62½	1.50	.60
Kansas City	1.05	1.32½	.80	1.12½	1.12½	1.50	1.12½	1.12½	1.12½	.70	1.25	1.12½	1.32½	.80	1.25	.92½	.92½	1.12½	1.25	1.12½	1.25	.75
Los Angeles††	10.00	8.00	6.00	7.00	8.00	8.00	8.00	7.00	7.00	4.00	8.00	7.00	9.00	7.00	9.00	7.00	7.00	7.00	9.00	11.00	10.00	†.75
Louisville	1.12½	1.25	.50	.80	1.00	1.00	1.00	1.25	1.25	.25 .35	1.37½	.90	1.62½	.60	1.12½	.30 .50	.85	.85	1.12½	1.25	1.00	.50
Memphis	1.00	1.37½	.50	.50 .87½	.50 .75	1.00		.75	.75	.20	1.00	.75	1.25	.50	1.25			1.12½	*1.25	1.37½	1.25	.50
Milwaukee	1.00	1.00	.90	.85	1.00	1.25	1.15	1.05	1.05	.50	.85	1.00	1.00	.90	1.60	1.00	1.00	.92½	1.00	1.00	1.00	
Minneapolis	1.06¼	1.10	.55 .65	.75 .85	.75 .85	.90	.80	.90	.90	.45	.75 .85	.80	1.10	.70	.95	.70	.70	.80	.95	1.10	1.25	.65
Nashville	1.00	1.00		.65		.75 .87½					1.00	.80	1.00	.30		.65	.65	.65	1.25	.90	.65	
New Haven*		1.40	.50 .65	.90 1.06¼	1.40	.80 1.00	1.16¾ 1.27½	1.37½	1.37½	.50 .65	1.27½	.80 1.00	1.40	.50 .65	1.06¼	.65	1.50	1.06¼	1.06¼	1.40	1.40	
New Orleans	.65 .80	1.25	.85	.55 .75	1.00	1.25	1.25	1.25	1.25	.35 .50	1.25	.75 .90	1.25	.75	1.00 1.25	.40	.99 1.15	.90	1.05 1.26	1.50	1.25	.35
New York City††	11.20	13.20	8.00	11.20	7.50	12.20	13.20				10.00	10.00	12.00	8.50	11.20	10.28	12.62	11.20	11.20		11.50	8.50
Oakland††	7.00	11.00	5.60	7.20	7.20	8.00	9.00	8.00	9.60	5.00	10.00	7.00	8.80	6.00	8.25	7.00	7.00	7.50	8.25	9.00	8.00	5.00
Oklahoma City††	8.00	8.00	4.00	6.00 8.00	8.00	6.00 8.00	8.00	8.00	8.00	3.50	.80	7.00 8.00	.80	4.00	.80	6.00	6.00	8.00	8.00		11.00	†.62½
Omaha	1.32	1.00	.45	.80	.90	1.00	1.00	.90	.90	.35	1.00	.80	1.00	.45	1.00	.72½	.87½	.87½	1.00	.90	1.00	.50 .60
Philadelphia	1.12½	1.50		1.00	1.05	1.25	$40.00 to $50.00 wk.	1.25	1.00 1.15	.30 .45	1.37½ 1.62½	.80	*1.62½	1.12½	1.04	.80 1.00	1.00	1.25	1.04	.50 1.00	1.25	.75
Pittsburgh	*1.70	*1.50		*1.25	*1.40	*1.56¼	1.37½ 1.43¾	*1.37½	1.37½	*†.80	*1.66¼	*1.27½	*1.66¼		*1.71¾	*1.50	*1.57½	*1.31¼	*1.71¾	*1.62½	1.33¾	.88
Portland, Ore.††	8.00	*12.00	4.80	7.20	*7.20	*8.00	6.40 9.60	8.80	8.80	7.20	*8.80	7.04	*9.60	*7.20	*8.80	7.20	10.00	*8.00	*8.80	*10.00	10.00	6.00
Reading	.70 .80	.90	.75	.75	.85	.75				.35	.75	.70	.85	.75	.90		.80	.80	.90	.75	.90	.60
Richmond	.60 .65	1.25	.55	.80	.75	.75 .87½	.75 .90	.90 1.00	.87½ 1.12½	.40	.75	1.70	1.25 1.50	.50 .60	.87½	.80	.80	.87½	.87½	1.25	1.12½	
Rochester	1.01¼	1.25		*1.00	*1.12½	*1.15½	1.00	.80-*1.00	.80-1.00	.55	1.00	*1.00	*1.25		*1.17½	*.90	*.90	*1.00	*1.17½	*1.25	*1.25	
Salt Lake††	6.00 7.20	9.00	6.00 8.00	7.20	8.00	8.00	9.00	8.00	8.00	4.00	10.00	7.20	10.00	8.00	9.00	7.20	7.20	8.00	9.00	9.00	9.00	†.50
San Antonio††	6.00 10.00	8.00 12.00	2.00 3.50	3.00 7.00	6.00 10.00	6.00 9.00	4.00 8.00	6.00 8.00	6.00 10.00	2.00 2.75	7.00	4.00 7.00	6.00 8.00	2.00 3.50	6.00 8.00	5.00 8.00	8.00	6.00 10.00	8.00	5.00 12.00	8.00 12.00	2.50 3.00
San Francisco	8.00	11.90	7.00	9.00	9.00	9.00	9.00		11.00	5.50	8.50 10.00	9.00	11.00	7.50	10.00	8.00	8.00	9.00	10.00		10.00	
Seattle††	8.00	9.60	5.28	7.20	7.20	*8.80	8.00	8.00	8.80	4.75	*8.80	*7.20	*9.60	*6.40	*8.80	7.20	7.20	8.00	*8.80	9.60	8.00	
Sioux City	.90	1.50		1.00	.75	1.00		1.00	1.00	.40	.90	.60 .90	1.15		1.00	.60 1.00	.60 1.00	.90		1.25	.60 1.00	
St. Louis	1.25	1.50	1.00	1.25	1.31¼	1.67½	1.35	1.47	1.47	.78¾	1.25	1.25	1.50	1.06¼	1.43¾	1.17½	1.25	1.25	1.43¾	1.25	1.25	76½
St. Paul	1.18	1.10		.75 .85	.75 .85	.90	.80	.90	.90	.45	.75 .85	.80	1.10	.70	.95	.70	.70	.80	.95	1.10	1.25	
Washington, D.C.	*1.50	1.75	.50 .75	*1.37½	1.25	*1.65	*1.37½	*1.65	*1.65	.75	*1.62½	*1.37	*1.75	*.75	*1.50	*1.37½	*1.37½	*1.50	*1.50	*1.25	*1.50	.75
Wichita	.60	.75 1.25	.25 .40	.40 .75	.40 1.00	.50 .87½	.30 .75	.40 1.00	.40 1.00	.20 .40	.50 1.25	.50 .87½	.60 1.25	.25 .50	1.00	.50 1.00	.50 1.00	.50 1.00	.75 1.12½	.75 1.25	.50 1.00	.25 .40
Youngstown††	*1.37½	12.00	6.80	10.00	9.00	11.00	10.00	12.00	12.00		12.00	10.00	12.00	6.80	11.00	10.20		10.00			10.00	.70

NOTE.—Where two figures are shown they are the minimum and maximum. All figures are for hour rates except as indicated. ††8-hour day. †Rate per hour. *On 5-day week basis. Asterisk after city indicates all trades on five-day week basis.

ABOVE DATA ARE WAGE SCALES AND DO NOT NECESSARILY INDICATE ACTUAL WAGE RATES BEING PAID IN THE RESPECTIVE TRADES.

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Steuben Architectural Glass in intaglio, designed by Raymond Hood, Architect, New York, N. Y., for elevator cabs of the Daily News Building, New York, N. Y.

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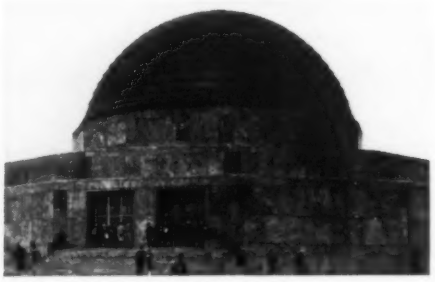

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SEWAGE DISPOSAL

PART TWO

(Continued from the July issue)

By GEORGE L. ROBINSON, Consulting Engineer

With institutions such as hospitals, prisons, hotels, factories, or small municipalities, the problems frequently become more complex.

In the first place the amount of sewage is so great that as a rule it must be so purified that it can be safely discharged into a nearby stream or water course.

A plant for, let us say, two thousand people in a State institution might be expected to produce about 200,000 gallons every twenty-four hours. Perhaps two-thirds of this flow will take place in twelve hours or there may be a flow of 140,000 gallons in the daytime with peak flow for an hour or so morning, noon and night of as much as 20,000 gallons in an hour. These of course are factors which must be predetermined from known data on the particular life habits in the institution.

Here again the site of the plant must conform with topography. The type of tank will be determinated by degree of purity required, availability of trained operators, nature of secondary treatment, etc. A popular type is the so-called Imhoff Tank which was developed by Dr. Carl Imhoff, from English tanks of somewhat similar design. This tank provides for a rapid settling out of the organic matter and its retention in a bay or hopper for extended digestion.

Hundreds of these tanks have been built in the United States and operated with considerable success. The period of retention of raw sewage is reduced to a minimum of perhaps three hours as opposed to the long period required in the older type of settling tank or septic tank. This offers an advantage in construction expense so far as the amount of material is concerned, but it requires a very deep excavation for the sludge digestion chamber and also very expensive concrete construction in the V-shaped chambers and slots through which the incoming organic matter is settled out.

Imhoff tank effluent is frequently oxidized by spraying over broken stone or slag filter beds by means of a siphon discharge and properly spaced special sewage spraying nozzles. The water passing from a filter bed of this type is quite highly purified and can be safely discharged into a large stream provided such a stream is not used at a nearby point for water supply.

The oxygen of the stream water will quickly burn out the small amount of organic matter remaining in the filtrate.

In case the stream must be further protected it is the common custom to install a chlorine plant

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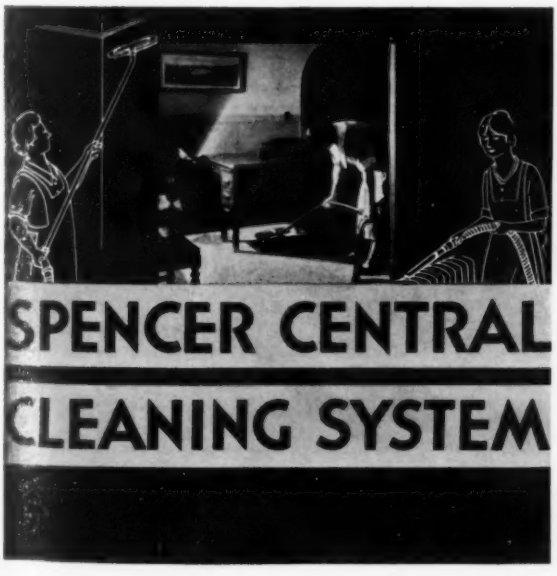

Shell Oil Bldg.
San Francisco
George W. Kelham
Architect

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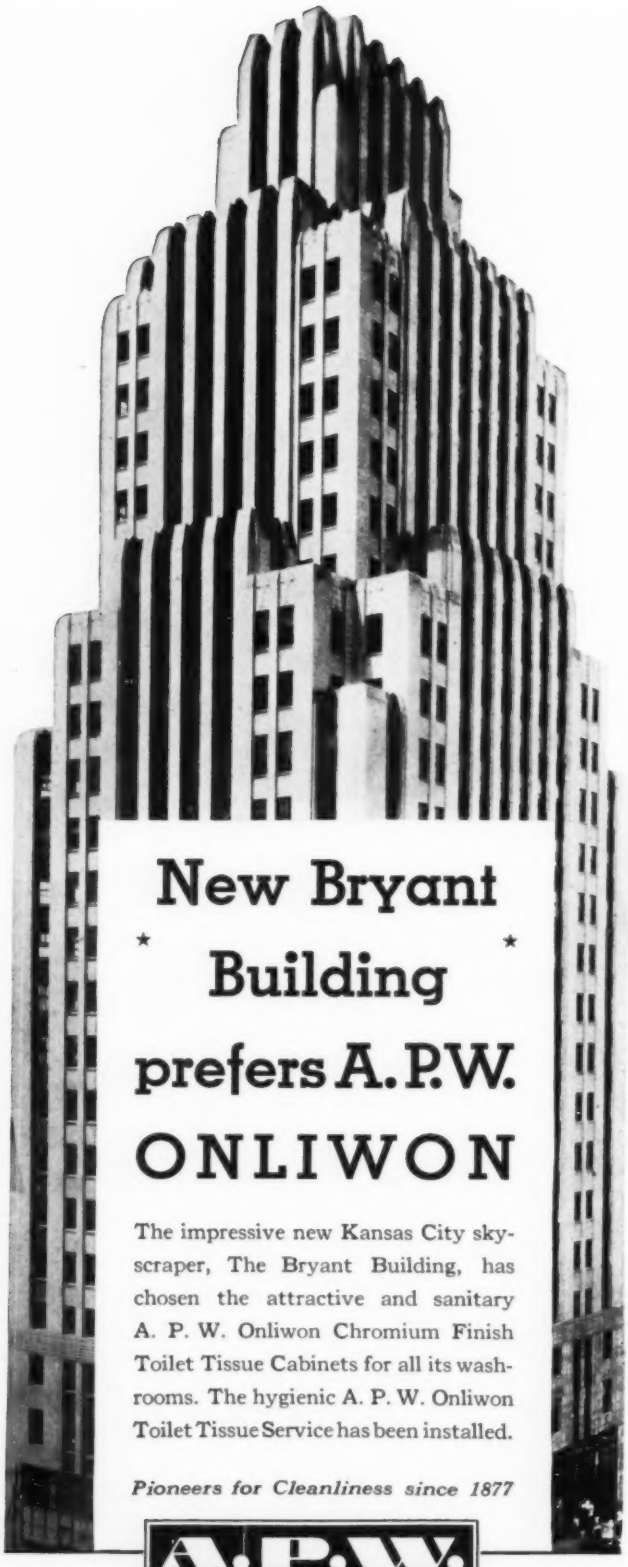


where the filtrate is treated with chlorine gas and so sterilized that it is safe from any suspicion as a germ carrier. Of course there are cases where the sprinkling filter is supplemented by sand filtration, or even where sand beds are used instead of rapid filters.

The rate of filtration on sprinklers is taken as a rule at 300,000 gallons per acre per day per foot of depth. As most filters are built with a filter depth of 6 feet this would give a rate of about 1,800,000 gallons per acre per day. Hence if you had to filter 600,000 gallons per day your filter area should be about one third of an acre.

In order to promote the oxidizing influence of the filters in the winter it is now the custom to cover the beds with a glass greenhouse roof.

The digested or stable sludge from the Imhoff Tank is drawn off at intervals as determined by tests by the operator. This sludge is of course ninety per cent water (plus or minus), but in most cases has reached a state of stability so far as further fermentation and gassing are concerned.

The sludge drying bed is laid out in such a way that the sludge can be drawn from the tank by gravity. It is made of filter sand with gravel underdrainage and tile collecting system. The usual allowance for sludge bed area is about one square foot per capita; when glass covered this may be reduced. The areas also depend upon the type of tank treatment.

It would seem unnecessary here to go into an historical sketch of the development of sewage disposal plant design.

However, it is most interesting to see what changes in design have come about in the last few years. The tendency in larger plants is to introduce more and more the mechanical factors which speed up purification to a high degree and reduce areas required for plant. This of course involves higher operation cost with supervision by trained men, to say nothing of high initial cost of plant.

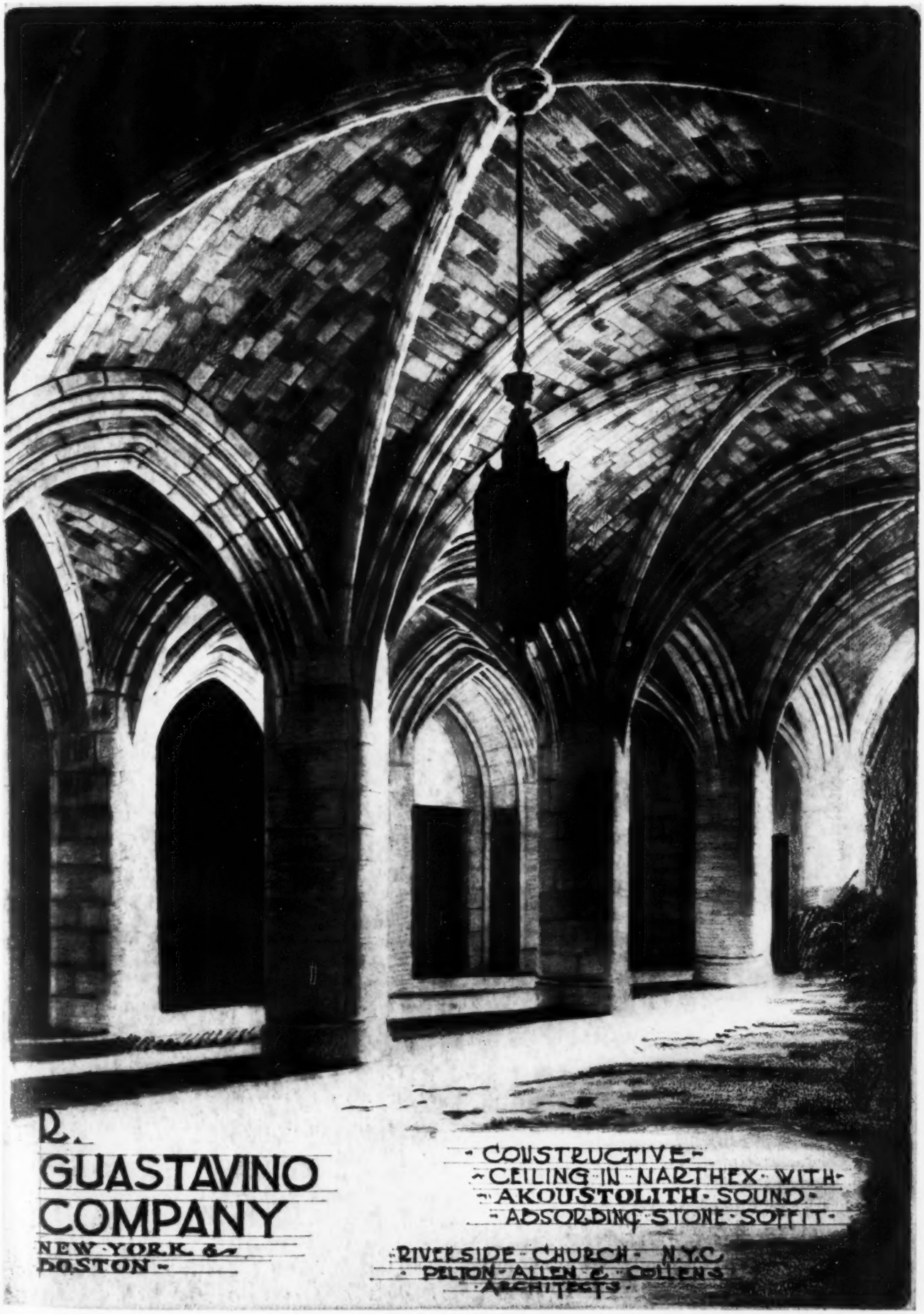
The so-called activated sludge treatment is now being used more and more in congested areas with larger populations and for factory communities.

It is particularly valuable where the sewage is highly organic such as the waste from an abattoir.

It is a bio-chemical process by which the purification is accomplished in tanks where sewage sludge is artificially agitated and mixed with raw sewage. This mixture is supplied with enough oxygen for the maximum development of the nitrifying bacteria adhering to the sludge. The final settlement causes a high degree of clarification of the oxidized sewage.

The sludge is a flocculent mass of a brown color which is developed by the aerobic bacteria in rapidly oxidizing and nitrifying the sewage which settles rapidly.

The advantage of this method is the rapid settling out of organic matter. It, however, requires a plant so arranged that the sewage may have a thorough mixing while aerating into activated sludge. This means special tanks, air mixing devices, pumps, compressors, gas collectors, etc.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MANUFACTURERS' ANNOUNCEMENTS

One word as to the representations made by plumbers who are exploiting ready-made plants. Here one is apt to be misled by extravagant claims as to the value of the "septic tank." These men as a rule have something to sell regardless of conditions which exist in the field. They endeavor to apply a stock design to every case and are quite likely to omit an investigation of soil conditions or proximity to water supply. It is far better to have the sewage disposal plant built in the field by persons of engineering experience and demonstrated competence. One will then have the judgment and guarantee of engineers rather than the haphazard methods of plumbers dealing in manufactured stock equipment.

AID TO LOCATING JOBS

The Philadelphia Technical Service Committee, by means of its job consultation service, has established a bureau that is intended to aid the employer in obtaining qualified assistants when needed.

An analysis of the applications already submitted indicates that the 900 registrants represent a cross section of the various technical professions, wage and age groups.

This group offers experience in 300 industries.

The address is Philadelphia Technical Service Committee, 1317 Spruce Street, Philadelphia, Pa.

MODERNIZATION AS A COMMUNITY PROGRAM

By A. B. RANDALL

(Continued from page 100, editorial section)

and working with bankers and money lending institutions, to afford a measure of relief and improvement to the conditions of his community.

Remodeling Procedure

It is obvious that a physical survey is necessary, even in cases where the architectural, engineering and various equipment plans are accurate and properly incorporate all recent changes. It is vital to have available detailed information on the present condition of the structure and the foundations, as well as on the machinery, equipment, decorations (both exterior and interior) and furnishings. This information is necessary in order first to determine the physical handicaps and deficiencies of the existing building and its varied equipment, and second, to afford an adequate conception of the existing building as a basis on which to plan possible additions, extensions, revisions and other improvements. The first consideration will often be aided by knowledge derived from surveys of similar buildings, particularly those which are newer and more successful, thus developing a comprehensive list of improvements for consideration in the remodeling program. The second phase is necessary in order to determine whether the building will provide an adequate nucleus for improvement, since it is always

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quite possible that there may be insufficient real value remaining to warrant anything but demolition and complete rebuilding.

The economic survey should consider the accounts of original capital costs, present book or fair value, the accounts of original and present capitalization, as well as current schedules of income, expense and net earnings. Frequently valuable knowledge may be gained from study of the accounts of income, expense and net returns for a period of years into the past. This analysis may be considerably augmented by knowledge of the same accounts of similar, and preferably more successful, buildings, for it is thus that weaknesses of the economic structure may be recognized. Such analysis of the financial side of the matter, and on a comparative basis, will materially aid in directing the program of remodeling and modernization along lines which will be effective in increasing the utility of the building, and hence its potential earning capacity. If the building is commercial in character, too much attention cannot be directed to study of market conditions for space. This should include knowledge of the rental rates and vacancies in various classes of space, both in the present field of use of the building and later in other fields of use to which the building might be converted. Market data are the basis for determining the possibility of additions to the building in order to develop more space for rental, or for deciding whether to abandon the present use of the building and convert it to some other type of use in better demand from which increased revenues might be obtained. For example, the considerations might range from a design for tenants occupying large areas or suites to a design accommodating tenants occupying relatively small areas or suites of rooms; or the change might be more drastic and sweeping, as for instance, the remodeling of a city club into a commercial or residential hotel.

With such wide ranges of possibilities, it is necessary that the studies should bring out all possible pertinent information on the trend of urban or district habits and customs that can be obtained, as well as detailed data on past and present rental rates, vacancies and occupancies, and the trend of absorption of new usable or rentable space in the various fields that are under consideration. In this, the preparation of a program for a remodeling and modernization operation is very similar to the work done before formulating a new building project.

The final determination of the program depends on the individual conditions met in the problem at hand, and the prime purpose should be to improve the functioning and the desirability of the building for its present or some other use, in order that conservatively estimated potential returns will be increased more than commensurate with the additional capital expenditures involved. If the building is a single-purpose structure, this should be done in order that its usefulness to the tenant or owner will be sufficiently increased, either by elimination of expense or by increase of productivity, so that additional capital investment is warranted.